The Characterization and Prediction of Soldier Performance During Routine Service and in Combat

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The National Research Council and
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14. ABSTRACT *(Maximum 200 words)*:

This study aimed to explore (1) the relationship between soldier performance during routine service and performance in combat; (2) the differential efficiency of selection scores in predicting routine vs. combat performance; and (3) the construct structure portraying combat soldier performance. Four groups of Israeli Defence Force soldier were subjects in the study; they were evaluated by ratings obtained by their direct commander, as well as hard data measures. Ratings of peacetime and combat performance showed significant moderate correlations. The ratings represent a meaningful construct structure and are efficient in predicting combat performance. Factor analysis yielded two factors each representing combat soldier performance in battle and performance during routine service, and three factors representing non-combat soldier performance. The predictive and constructive validity they show make the questionnaires employed in this study both efficient predictors and useful evaluation procedures of soldier performance in combat. These results have direct implications to unit command and unit management during routine service and to attitudes which commanders would strive to impart in their soldiers.

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*"and they shall beat their swords
   into plowshares,
and their spears into pruning
   hooks;
nation shall not lift up sword
   against nation,
neither shall they learn war any
   more."*

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The Characterization and Prediction of Soldier Performance During Routine Service and in Combat

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Abstract

This study aims to explore the following three subjects: (1) the relationship between combat soldier performance during routine service and their performance in combat, (2) the differential efficiency selection composites and scores show in predicting combat soldier performance in routine and in combat, and (3) the construct structure portraying combat soldier performance. The validity of selection composites and the construct structure characterizing performance were studied with regard to soldiers in non-combat jobs as well.

Four groups of Israeli Defence Force (IDF) combat soldiers were subjects in the study: (1) Ground Forces combat soldiers in the course of their routine service, (2) Ground Forces combat soldiers after fighting a battle, (3) soldiers who were in group 1 and in group 2, and (4) soldiers who were serving in non-combat jobs. All the soldiers were draftees and were at least 6 month in the military before ratings of their performance were obtained.

Soldier performance was evaluated by ratings pursued by the soldier's direct commander. Hard data measures of soldier routine performance and soldier's selection composites were recorded as well. Ratings referred to a variety of aspects representing soldier performance during peacetime and in routine measured independently by two questionnaires. The hard data measures were records of disciplinary conduct, training achievements, rank at end of service, and selection scores.

Results show that ratings of soldier peacetime and combat performance show significant medium scale correlations (r = .40-.50). Peacetime summative and specific aspects of technical-and-tactical, professionalism and promotion, and of prospects for performance in combat showed higher relative correlations, and work regimen and discipline aspects showed lower relative correlations with combat performance.

Findings regarding the questionnaires used suggest that the ratings represent a meaningful construct structure and that they are efficient in predicting soldier combat performance. Factor analysis and Smallest Space Analysis (SSA) were applied in search of such a meaningful construct structure and characterization of combat and non-combat soldier performance. Two factors represented combat soldier performance in battle. Those were: (1) "combat functioning", which included items directly related to the functioning in combat, and (2) "routine functioning and promotion", which included items implying a wider functional perspective. Two different factors represented combat soldier performance during routine service: (1) "promotion professionalism and prospects for functioning in combat", and (2) "work regimen and functional performance". Factor analysis characterized non-combat soldier

performance by the three following factors: (1) "effort and integration in unit", "promotion and professionalism", and "work regimen".

SSA results suggest that a Radex two-facet hypothesis represents combat soldier performance, that a circumplex two-facet hypothesis represents peacetime combat soldier performance, and that a circumplex one-facet hypothesis represents non-combat soldier performance. The two facets identified were: (1) a summative-general facet, and (2) a functional-specific facet. The elements comprise the specific-functional facet might be generalized and thus represent the following five aspects: effort, professionalism and promotion, work regimen, disciplinary conduct and prospects for combat functioning. A technical-and-tactical element and a functional-performance-and-promotion element comprise the summative facet.

Based on the common elements identified a unified radex hypothesis explaining combat soldier performance both in peacetime and in combat.

The predictive and construct validity they show make the questionnaires employed in this study both efficient predictors and useful evaluation procedures of soldier performance in combat.

These results have direct implications to unit command and unit management during routine service and to attitudes which commanders would strive to impart in their soldiers.

The selection measures studied proved to achieve significant correlations with soldier routine performance. Although validities toward combat performance were significant as well, selection scores achieved lower correlations in predicting soldier combat performance. Differential predictions were achieved by the sub-scores comprising the composite. While the cognitive abilities correlated higher with combat soldier performance, scores representing potential for adjustment to the military achieved higher predictions of non-combat soldier performance.

Introduction

In Perspective

Military organizations are similar to other large-scale civilian organizations in many respects. Being non-profit in nature, and lacking common service orientation, military organizations may even be classified as bureaucratic. Moreover, there appears to be nothing unique about many aspects in the routine functioning of militaries. Other organizations have developed or applied more advanced technologies, run more elaborate manpower systems, or presented more intensive hardships to their members. Even in terms of characteristics said to be peculiar to the military (e.g., order, efficiency, discipline), one may find organizations which achieve higher standards in these areas.

While the human factor is similarly represented in many organizations, unique characteristics differentiate militaries with regard to this factor. Combat often requires soldiers to overcome basic survival instincts and to adopt unusual coping patterns, making combat situations very different from any type of peacetime interaction or, for that matter, from routine military service. The actual threat to life involved in combat affects all military elements related to the human factor, influencing the essential characteristics of the way militaries function, their norms, values, and culture, both during everyday routine and in times of war.

Apparently, the impact of this existential element is reflected in the human factor more than in any other military system, both at the level of the individual soldier and at the manpower systems level. Though aspects relating to the human factor (e.g., disciplinary rules, the conduct and norms, the ranks and the orders guiding the command system, structure of the chain of command, and total control over servicemen) may differ in detail in various organizations, all stem from this very notion.

The intense existential experiences involved in combat and fighting, and the critical importance of performance in such situations has led to an extensive literature on combat and war. People who have experienced fighting (and those who have not) have expressed their feelings and attitudes toward this experience in prose, poetry, painting and sculpture ever since these arts began. Consequently, considerable research and analytic efforts, episodic as well as systematic, and theoretical as well as experimental, have focused on studying the factors and correlates related to combat performance.

Research on military performance has tended to focus almost exclusively either on performance in combat or in the routine military setting of peacetime.

The first line of research has focused on combat and its situational correlates. Some of the studies in this category are already classics in the field (e.g., the works of Stouffer et al., 1949, on American servicemen in World War II, and of Hemphill and Sechrest, 1952, on U.S. aircrews in the Korean War). These classics have furnished a basis for a growing body of research focusing on the combat perspective-- see Black (1987), Kellet (1982), Milgram (1986), Richardson (1978). Still, difficulties in conducting research during wartime and combat enabled only few of them to collect and present empirical data regarding the variables relevant to actual combat performance and the interrelationships among these variables.

On the other hand extensive research efforts have been devoted to studying peacetime military service. Selection, recruitment, training, performance, operational functioning, as well as other aspects of peacetime military service have been considered in relation to many relevant factors and processes (motivation, leadership, job satisfaction, etc.; e.g., Ingraham, 1984; Moskos, 1970; Wiskoff & Rampton, 1989).

Evidently, understanding the factors and processes influencing human performance in each of the situations-- combat and peacetime-- is of considerable importance. It does not, however, address a most important question: how do performance, achievements and abilities shown in civil life, or during military peacetime activity, relate to performance in combat, the military's ultimate criterion. In view of the disparity between the situational characteristics and functional demands of the two settings, it is of vital importance to determine whether these differentiated functional requirements interrelate, and in what pattern.

Yet we would be hard put to find any systematic research which examines the full sequence of soldier behavior in peacetime and in combat within a single research paradigm. Selection in the military may represent the results of the absence of such data. Although selection composites applied in the military setting have proven to be efficient predictors of peacetime military performance (Dover et al., 1989; Peterson, 1987), their validity has not been studied in connection with combat activity. Hence, we do not know whether these measures are efficient at predicting the performance of soldiers in combat. The same may be said of military training and performance evaluation systems, and of policies regarding the socialization of soldiers in such spheres as discipline, job attitudes, cohesion, and leadership.

The Korean War Studies

The only documented systematic study of the relationship between peacetime and combat performance was conducted by the U.S. Army during the Korea War. Peacetime data addressed in that effort contained specific personnel measures (certain psychometric tests and personality and personal inventories, limited training indices, etc.), while combat performance was essentially represented by a single global evaluation question answered by direct commanders of the soldiers.

A number of research efforts looked for background biographical correlates of combat performance. In one study King et al. (1952a) correlated schooling achievements and supervisor and peer evaluations of 43 West Point graduates with their combat performance measured by a single-item evaluation question. The researchers found a substantial correlation between Aptitude For Service Ratings (a combined global score composed of peer ratings and tactical officers' evaluations of the chances for a cadet to prove to be an effective officer) of last year in West Point and combat performance ratings (r= .52). The final graduation score also showed a considerable correlation with combat performance (r= .43). In addition, combat performance ratings were more highly correlated with West Point grades on applied courses (Tactics, r= .20; Electricity, r= .24; Mechanical, r= .19) than with either grades on academic courses (Mathematics, r= .01; English, r= -.02) or with standards of conduct (r= .07).

Tiemann et al. (1952b) investigated the relationship between years of schooling, civilian occupation, and combat performance. Studying a sample of 5000 soldiers they found a low correlation (r= .08) for schooling, and no particular civilian occupation associated with superior combat ratings. Another personal parameter studied was length of service. While replicating Jensen et al. (1952), Tiemann et al. (1952b) showed that the correlation between length of service and a global measure of combat performance found in both studies was largely due to the higher ranks held by those soldiers staying longer in Korea. After controlling for rank they found insignificant correlations between length of service and combat performance ratings (r= .05; r= -.02 respective to the samples studied)

Two other studies focused on the relationship between selection measures and psychometric tests and a global evaluation measure of combat performance. Studying the Career Guidance Program test measures, Berkhouse et al. (1952) found no significant correlations between Achievement Test Score and a global measure of combat performance. While the latter study was based on a small sample (61 soldiers), Tiemann et al. (1952a), addressing a much larger sample (718 to 773 soldiers), found low but significant correlations between three aptitude tests and a global measure of combat performance (Visual Classification Test, r= .13;

Reactions to Signals Test, r= .18; Hidden Figures Test, r= .12; The Spatial Movement Test showed a non significant correlation, r= .06).

Jensen et al. (1952) and Drucker et al. (1952) studied the relationship between measures of training and job proficiency and a global measure of combat performance. In the first study Jensen and his associates found no consistent differences among the average combat performance ratings of groups which had received different lengths of basic military training. The findings were replicated among both high and low quality soldiers. Drucker et al. (1952) examined two measures of Proficiency in Arms: Qualification on M-1 Rifle and the number of different arms for which "familiarization" or "qualification" was recorded for every soldier. In the two units studied the research found contradictory and even negative correlations between job proficiency measures used and a global measure of combat performance.

Finally, a number of studies investigated the relationship between self-descriptive personality and personal inventories and combat performance. King et al. (1952b) correlated the Personal Inventory and the Self Description Blank (two self-description questionnaires constructed for administration to combat infantry-men in Korea after the Army successfully employed self-description inventories to select personnel for Arctic duty) with combat performance. Both questionnaires showed insignificant correlations with a global measure of combat performance. Confusing and inconsistent results were obtained even after revising scoring keys (Gaylord et al., 1952). Within the study already mentioned above, Drucker et al. (1952) correlated the Army Activity Preference Blank (APB-1) (56 forced-choice triads representing 9 interest fields) with a global measure of combat performance. Research results showed insignificant correlations for all the interest fields represented in the questionnaire (military science and tactics, mechanics, construction, crafts, electricity and radio, science- medical-technical, clerical-computational, precision tool, food service).

Indirect Combat-Related Evidence

Reported studies conducted in the Israeli Defense Forces (IDF) suggest some additional direct and indirect insights regarding the relationship between combat and peacetime performance of soldiers. Rosenberg et al. (1968) studied correlates of unit and soldier effectiveness derived from performance in the Six Day War. The researchers identified 5 factors related to combat effectiveness, two of which, discipline and concern for wounded comrades, refer to the functional level of the individual soldier.

In the same line are the findings of the two following studies cited in Dover (1988). In one study accomplished after the Yom Kipur War, researchers (A. Tversky, I. Stern, Y. Zinger, and R. Bait) found that soldiers perceived motivation, cohesion, courage and morale as contributing to their success in combat. Another study following the Lebanon War (I. Brandt), found that commanders regard soldier professionalism and motivation as factors contributing most to success in fighting. Professionalism was conversely found to represent one of the three factors building soldiers' confidence in their commander (Kalay, 1982).

In studying morale and combat readiness in IDF units stationed along the Lebanese border and in U.S. Army units stationed along the border with East Germany, Gal & Manning (1987) found an individual professional factor and a factor portraying individual worries in addition to leadership and group factors.

Research studying soldier and unit effectiveness in both routine and combat operations (Tziner & Vardi, 1982; Rosenberg et al., 1968), as well as comprehensive reviews of the literature (Oliver, 1987; Stewart, 1987) seems to establish the relationship between cohesion and unit effectiveness. Shirom's (1975) findings regarding cohesion and the factors comprising it suggest the individual connection of cohesion. According to his research findings, the degree of attributed combat effectiveness of the unit is highly related to the extent to which each soldier is ready to extend social support to his comrades.

Surveying studies conducted in the IDF as well as others reported in the literature, Dover (1988) suggested that the following five variables influence combat performance most: 1) cohesion, 2) confidence in the commander, 3) motivation, 4) professionalism and 5) morale. Although a translation of these combat performance related variables to peacetime setting and to the individual level is needed, neither the patterns of the interrelationships among those variables within each setting, nor the relationships between combat and peacetime derivatives of these variables were revealed.

Simulations and Exercises as Representations of Combat Situations

The study of indirect construct-based inferences of combat situations, such as simulations, exercises and routine operational-type activities, may suggest a method to overcome the evident difficulty in studying the peacetime-combat paradigm.

Although addressing the individual perspective only through commander evaluations, the study conducted by O'Mara (1989) provides the most direct information regarding the relationship of training and personnel factors to simulated combat performance. Studying the relationship between home-station

performance and performance in the U.S. National Training Center (NTC) O'Mara (1989) reports that no relationship was observed between home station leadership and either leadership or unit performance in NTC. However, researchers did find that units which emphasized the development of collective skills in their home station training tended to perform better at NTC. Conversely a negative relationship was observed between a unit emphasis on individual training and subsequent NTC performance. With regard to the social perspective a correlation was found between unit stability and unit combat performance.

Other studies of simulations and exercises focused on performance during the combat phase of the simulation, relating it only indirectly to routine activity. Within this perspective, functional-physical or unit-related aspects of performance are essentially addressed (Ainsworth & Bishop, 1971; Haslam et al., 1977; Manning, 1978). Some of the findings of these research efforts suggest insights regarding their peacetime derivatives at the individual level. Such are Mannings' (1978) and Haslam and his associates (1977) findings regarding the resistance of standard performance procedures to deterioration during sustained operations.

At the extremity of the functional line of research are efforts to quantify deterioration in performance during combat, and to integrate it within a broader mathematical expression representing unit effectiveness (Siegel et al., 1980).

The Use of Ratings as Performance Measures

Most combat as well as peacetime performance is not quantifiable, hence classified into the category of non-objective performance measures (Guion, 1965) and leans on rating as the only measure of performance. A number of considerations made the application of ratings for performance evaluations most popular in spite of their potential deficiencies and limitations: (1) situations such as combat do not allow for any other measure of performance, (2) even when hard data measures are obtained their meaning is defined by judgments, (3) evaluations are functional to the organization and are required in its processes, (4) they are the most immediate, available and inexpensive indicator for subordinate performance (Lent et al., 1971; Bernardin & Bitty, 1984).

Research on the quality of ratings as performance evaluation measures focuses on two major issues: (1) the reliability of the evaluations, (2) their validity. Fairness of personnel decisions and efforts to improve validity results brought into light the reliability issue regarding the application of evaluation measures. Concerns about evaluations and ratings reliability refer to biases and distortions related to these measures. Evaluation biases and distortions show in different forms (leniency and severity, central tendency, personal biases and preferences,

halo; e.g., Saal et al., 1980). Efforts to overcome evaluations' reliability deficiencies focused on improving the evaluation procedures and techniques, on developing statistical procedures which will overcome these biases, and on acquiring a better understanding of the statistical results (e.g., Wherry & Bartlett, 1982; Landy et al., 1980).

Still, since there is no way to prove that either of the biases represents an error rather than a true score, the consequences of the deficiencies identified for assessing the merit of performance evaluation measures are not clear (Landy, 1980). Another question regarding reliability refers to the definition of the subject matter to be measured. The findings of Severin et al. (1952a) illustrate the issue in a relevant context. While studying the statistics of two alternative global combat performance evaluation measures, Severin and his associates found correlations of .46 to .53 between the first and the second evaluation of the performance of company and platoon commanders and of squad leaders. In addition, the researchers computed both actual and theoretical reliabilities for the average number of ratings per each ratee as well as for the cases showing 2, 3, and 4 evaluations. The reliabilities for the average number of ratings varied from .66 to .71. Even higher reliabilities were achieved while applying the same method to enlisted soldiers (Severin et al., 1952b). The findings showed that reliability improved with increase in number of observations (.63, .72, .79 for the first scale and .69, .77, .82 for the second scale for 2, 3 and 4 ratings respectively).

Epstein's (1979; 1980) findings support Severin's results. In his studies, Epstein found that the increase in reliability over observations may be generalized for both different behaviors and different performance measures (including evaluations).

While suggesting support to the application of performance evaluation measures, these findings raise substantial questions regarding the criterion to be measured. Such questions are: In what level do raters represent performance evaluation measurement best? Should all the raters related to ones performance be involved in the evaluation? How many measurements are needed in order to establish a fair measure of the performance? Of course, different answers will lead to different definitions of the biases and deficiencies identified as error (Buckner, 1959; Freeberg, 1969; Landy, 1980).

Either leading to a smaller or a larger error the deficiencies mentioned may indeed cause deterioration to the predictions achieved by performance evaluations, as well as to the correlations other predictors show with them. Such deterioration may result in low or insignificant coefficients between ratings and different criteria which they are being related to (Bray & Campbell, 1968; Hunter, 1983). Nonetheless, when defined either as predictors or as criteria, performance

evaluations obtain reasonable validities as well. Results in this regard show correlations varying from medium-high (r= .30 and above; e.g., Hunter, 1983; O'Mara, 1989; Tziner & Dolan, 1982; Wiley, 1974) to medium-low and low (r= .25 and lower; e.g., Dover et al., 1989). As Bray & Campbell (1968) suggest, this variability may be dependent on the evaluation method used, the context of application, and the type of criterion. More than that, even variables that show high intercorrelations may show a considerable variability when correlated with other criteria (Dover et al., 1989).

In view of the basic problems involved in defining reliability of ratings, the careful build-up of the elements forming the evaluation process gains additional importance. These elements are (1) defining the relevant functioning dimensions, (2) defining rater-level that would be best able to evaluate the object of the evaluation, (3) providing the evaluators with enough opportunities for observation. On the other hand, data regarding both construct and predictive validity of the measurements, become most important for the evaluation of how meaningful the results are, and how are they to be interpreted. This emphasis on what is measured rather than on measurement techniques gains additional support from findings showing small differences in the results obtained by different types of performance evaluation scales (Borman & Dunnete, 1975), and that rather than type of scale or format of evaluation, the type of work measured is most significant for the measurement process (Harris & Schanbroeck, 1988).

The study of soldier combat and peacetime performance, either when addressed as criterion or as predictor, shares the methodological deficiencies common to the study of other non-quantifiable performance products of individuals, groups, and even projects measured by evaluation. A number of factors, unique to the setting of this study, may additionally characterize evaluations in it. Part of these factors may even have contradicting influences. For example, evaluations were made with regard to functioning in the context of a small (squad-level) unit and in reference to a relatively well defined setting of performance standards. Thus, high intercorrelations among the evaluation items are expected. On the other hand, the organizational culture characterizing relationships between NCOs or company commanders and soldiers in the IDF is achievement-oriented, open, and characterized by criticism typical of the young. Such an approach may lead to sincere, even strict, evaluations.

Thus, in spite of the expectation of social bonding influences, and of the social-bonding and personal-commitment-enhancing processes engendered by common experiences during routine military service (and even more so in combat), there is no a priori evidence suggesting that the evaluations are skewed or not valid.

This Study

The Korean War studies described above suggest relevant but limited information regarding the relationship between combat and peacetime performance, mainly because they employed only one global measure of combat performance. The use of one global measure of performance did not allow exploration of a wider scope of performance dimensions relevant to combat performance. Nor where selection measures or training achievements studied vis-a-vis performance in combat. The other studies surveyed above suggest only indirect inferences regarding the focus of this study.

Based on ratings of combat soldier performance during routine service and in combat the purpose of this study is to define a construct structure and a systematic characterization of soldier performance, both during routine activity and in fighting, and to explore the interrelationships between the major dimensions of soldier peacetime and routine performance and those of their combat performance. Consequently, this study will establish the validity of the rating procedure used to evaluate soldier peacetime performance toward their ultimate criterion: their performance in combat. In addition, the validity of selection measures and of training achievements toward combat performance will be examined. While fighting is not expected of non-combat soldiers, the other objectives defined above will apply also to the a non-combat soldiers group in the study.

In view of the limited systematic data on the subject it is hard to define a priori hypotheses regarding the expected relationships. Hence, this study will be defined as explorative in nature.

Four groups of soldiers, all of them conscripts, are the subjects of this study: combat soldiers during the course of their routine service, combat soldiers immediately after being involved in fighting, soldiers included in both groups mentioned above, and a group of non-combat soldiers. While the combat soldiers in the study represent the ground forces only (Infantry, Armor, Engineers, Artillery), the non-combat soldiers represent a wide variety of technical, clerical and combat support jobs. The data base includes performance evaluations as well as hard data measures regarding soldiers' selection scores, their actual promotion throughout service, their disciplinary conduct and their MOS training achievements. Ratings were done by the immediate commander of every soldier.

While attention is given to the deficiencies typical of ratings, results may have direct implications for soldier selection, training and evaluation as well as to policies regarding unit command and unit management.

Method

Sample

Four groups of soldiers, all conscripts, were studied in this research. Subjects in all groups were enlisted and were not involved in command or NCO jobs.

1. Group (1) - 752 Ground Forces combat soldiers who have been involved in actual combat operations. Soldiers in this group have served 6 to 24 month in the army when rated.
2. Group (2) - 1279 Ground forces combat soldiers in the course of their routine military service. Soldiers in this group have served 6 to 12 month in the army when rated.
3. Group (3) - 100 soldiers who were in both the first and the second groups. It is important to note that the commanders who rated these soldiers in peacetime were other than those who rated them in combat.
4. Group (4) - 2291 non-combat soldiers representing a wide variety of military technical, clerical and combat support jobs. Soldiers in this group have served 6 to 12 month in the army when rated.

Measures

Selection scores and hard data measures

The selection scores and the hard data measures employed represent two main perspectives: one focusing on the predictors, and the other addressing the criteria.

1. The following four measures have been applied within the prediction perspective:

a. The Primary Selection Composite (PSC; KABA in IDF nomenclature) - A composite score used in the IDF for purposes of primary selection and placement (Amir et al., 1970). The score has 14 values which lead to three quality categories. The other three measures applied within the prediction perspective are the PSC's components. These are:

b. The Cognitive Ability Score (CAS; or DAPAR in IDF terminology) - based on construct and predictive validity considerations, the four tests comprising this measure represent the cognitive ability of the draftee represented in stenines (Reeb, 1961).

c. The Potential for Adjustment (PA; IDF name: ZADACH) - This is a combined score defined at the end of a structured interview. The score has 33 values (8 to 40), and it represents four dimensions of functioning designed and validated to predict potential for adjusting to combat as well as to non-combat jobs (Zedeck et al., 1983).

d. An adapted measure ranging from 1 to 14, reflecting years of Schooling (Reeb, 1961).

2. The measures representing the criterion perspective are:

a. Rank at end of service - representing the promotion perspective. The categories of this measure are: Private, Private First Class, Corporal, Sergeant, Officer.

b. Number of disciplinary violations (desertion, A.W.O.L., imprisonments) - this measure reflects discipline and adjustment to service demands.

In addition, the score at the end of the first professional course the soldier undertook in the Military Occupational Specialty (MOS) he was assigned to was recorded. This score may be interpreted within both the criterion and the predictor perspectives.

Performance-Evaluation Rating Measures

Two rating measures were employed in this study in order to evaluate soldier performance: the "Soldiers' Peacetime Performance Evaluation" (SPPE) questionnaire (see translation[1] in App. 1), and the "Soldiers' Combat Performance Evaluation" (SCPE) questionnaire (see translation[1] in App. 2). Both questionnaires were designed to be administered in the field as well as in units, thus planned to be short and easy to answer.

1. Soldiers' Peacetime Performance Evaluation (SPPE) - This evaluation procedure (see Appendix 1) was defined and applied as one of the criteria used to validate the IDF's revised primary selection system (Dover et al., 1989). The SPPE was composed based on extensive data regarding a number of already operating soldier performance evaluation procedures. These procedures have used critical incidents and behaviorally anchored items, as well as trait and summative items, while addressing aspects of general performance and adjustment to military service

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[1]The interpretation of some of the words used in the questionnaire is culture-bound. Thus, the translation sought to reflect equivalent meaning rather than parallel wording.

of both regular and disadvantaged soldiers. The questionnaire consists of 18 items. The study mentioned, and the other it refers to, found that SPPE items may be represented by three factors: (1) general functioning - a major factor explaining for 85.7% of the variance and loaded by the items: 1, 2, 3, 7, 8, 9, 10, 13, 14, 15, 16, (2) promotion prospectives - a secondary factor explaining 8.6% of the variance and loaded by items: 4, 5, 17, 18, and (3) discipline - another secondary factor explaining 5.6% of the total variance and loaded by items: 6, 11, 12.

The first five items of this questionnaire ask for the rater's evaluation of the present abilities of the soldier as well as for the rater's prospects for the performance of the soldier in the future. The next eleven items are declarative, behaviorally-anchored statements. The last two items ask what chance the rater gives the soldier to successfully graduate from NCO or officer training. Except for the last two the items are followed by a 5-point Likert-type response format with anchors ranging from "very low" (1) through "very high" (5). The last two items require the rater to indicate the soldier's chances on a 9-point scale ranging from "10% and lower" through "90% and higher".

Reliability proved to be high for the scales representing the "general functioning" and "promotion prospectives" factors ($\alpha = .95$; $\alpha = .92$ respectively) and lower for the scale which represents the discipline factor ($\alpha = .68$).

2. Soldiers' Combat Performance Evaluation (SCPE) - This evaluation procedure (see Appendix 2; see [1] above) was developed during the Lebanon War. The abruptness of the war, and the immediacy of its demands, did not allow for a careful psychometric development process. Hence, the questionnaire was composed based on findings regarding other questionnaires employed in combat situations. In addition, although combat requirements made many SPPE items irrelevant, the possibility to permit a comparison between similar peacetime and combat functional dimensions led to an effort to rephrase some SPPE items so that they address analogous combat aspects.

The questionnaire consists of 17 items representing combat task-related evaluations. The first seven items are declarative, behaviorally-anchored statements referring to both technical-and-tactical and motivational aspects of soldier's performance during combat. The next four items are summative questions regarding performance during combat. The next two questions refer to soldiers who hold command positions during fighting (due to the limited number of such soldiers these questions were omitted from the analysis). The last four questions refer to the soldier's professionalism, the rater's estimation of his chances for promotion, and his performance prior to the fighting.

The items are followed by a 5-point Likert-type response format, with anchors ranging from "very low" (1) through "very high" (5). Due to the circumstances, no reliability data or item statistics were available for this questionnaire prior to its administration.

Procedure

The data base of the study consists of two main sources of information: the evaluation questionnaires and the selection and personal hard data behavioral measures.

1) The performance evaluation questionnaires: In order to maximize reliability and validity of evaluations (Epstein, 1979; 1980) both questionnaires were answered by the immediate commanders of the soldiers rated. In infantry and infantry-type units these were mainly squad leaders, while in armor units these were company commanders.

a) The SPPE questionnaire: This questionnaire was routinely administered to the immediate commanders of the soldiers participating in the validity sample of the study which aimed to revise the IDF's basic selection system. The soldiers were evaluated about 6 to 12 month after recruitment. At that time, they had accomplished basic and MOS training, and were already serving in the unit.

b) The SCPE questionnaire: A team of psychologists from the IDF's Department of Psychology and Behavioral Sciences went to the front. The team followed the fighting and arrived to the Ground Forces fighting units (Infantry, Armor, Engineering and Artillery) anywhere from a day to a week after the combat. Again, the immediate commanders of the soldiers were asked to evaluate their soldiers' performance during combat. The soldiers rated in these units were about 6 to 12 month after recruitment.

2) Personal behavioral hard data measures: All the soldiers evaluated were identified. At the end of their service, the relevant hard data selection and achievement measures mentioned above were reproduced for each soldier, and matched with the evaluations he had-- the SPPE alone, the SCPE alone, or both.

Analysis

The major perspectives of this study, the relationship between peacetime and combat performance, and the construct structure of combat and non-combat soldiers, both require the use of measures of statistical relationship. As mentioned

above, skewness of evaluations and high intercorrelations between evaluation items are major concerns in this regard. In view of the literature regarding the quality of evaluation measures there is no basis to assume that the evaluations made by the raters in this study do not reflect a true score. Still, the data will be studied in order to find indications supporting this contention. These will mainly be variability in items intercorrelations patterns and in their correlations with hard data measures.

The construct structure of combat and non-combat soldiers and their characterization involves identification of the configurations and of the most parsimonious representation of item questionnaires. In view of the high intercorrelations expected, procedures focusing on the configuration of the interrelationships among the variables (Guttman's Smallest Space Analysis) have been employed in addition to statistical procedures that focus on the variance (e.g., factor analysis).

While Factor Analysis (Spearman, 1904; Mulaik, 1972) is well known and widely applied, the Guttman conceptualization and procedures (Guttman, 1968; Lingoes, 1973) require some introduction. Unlike other multi-dimensional procedures the Guttman facet theory (Guttman, 1954, 1959; Shaye, 1978) suggests a conceptual framework, complementary constructs suggesting a systematic basis for theory construction vis-a-vis the research domain studied, specific hypotheses regarding results pattern, and statistical procedures (SSA, MSA, POSA, etc.) that allow for hypotheses testing within a non-metric frame of reference.

Facet theory building begins with restructuring of the contents of the research domain into groups representing distinct aspects of that content domain. These groups are called Facets. The facets defined, called content facets, comprise elements representing specific aspects of the content domain represented by every specific facet. The combinations of the elements of the different content facets represent the research variables. The content facets are related to the specific population they address, and to the set of responses defining the range according to which they were measured. The latter set of elements define another type of facets, range facets. A theory regarding the issue studied is defined by a mapping sentence, a verbalized representation of the association of facets and elements in the content domain to the facets and elements of the range.

Based on assumptions about the relationship between the facets and elements or about the order they follow, hypotheses are made regarding the expected spatial contiguity which a dimensional analysis of the variables will yield. Basically, the more related the combinations representing the research variables are assumed to be, the higher the correlation they show, or the closer in order they are the closer they will show on the relevant multi-dimensional facet analysis representation. To

date, SSA theory specified three basic hypotheses, each suggesting a respective spatial contiguity configuration: Circumplex, Porex and Radex. The circumplex hypothesis assumes independency among the facets and will result in a distinct direction every facet will follow in the spatial configuration. The radex hypothesis assumes that one polarizing and another segmenting facet shape the spatial arrangement of the variables. The porex hypothesis assumes a resulting spatial contiguity which reproduces the theorized partial order among the elements and combinations of the facets and elements involved.

Facet theory allows also for an a posteriori interpretation of results: already having the SSA results, one may trace back and restructure the facets and the elements, define them within a theory (a mapping sentence), and test for the hypothesis explaining its spatial configuration. Since the SPPE and the SCPE where not developed along a facet theorization and design a priori, this study will apply such an a posteriori approach in the interpretation of the data.

Findings

Statistics of the Measures Employed

Appendix 3 shows the means and standard deviations of SPPE items for each of the groups studied. Appendix 4 shows the same statistics for the SCPE, and Appendices 3 and 4 also show the statistics of questionnaires' sub-scores. These sub-scores were defined based on factor analysis, SSA results, and conceptual considerations. While the appendices present the data and the definitions of the sub-scores, the rationale that led to their definition will be described later in the report.

A general summary of the results shows the following: (1) while the mean for combat soldiers' SPPE 1-5 scale items was 3.71 and the SD was .91, the item means varied from 3.10 to 3.99 and their SDs ranged from .92 to 1.31; (2) SPPE results for the non-combat group showed a mean of 3.61 and an SD of .77 for the 1-5 scale questionnaire items, with item means varying from 2.84 to 4.09, and item SDs ranging from .91 to 1.56; (3) the SCPE had a mean of 3.75, with a .82 SD, while item means ranged from 3.06 to 3.93, and SDs ranged from .82 to 1.28.

As expected, the statistics obtained portray a skewed distribution of the SPPE and SCPE total and sub-scores, and of almost all of their items. Still, SD values suggest use of quite a wide scale range.

Statistics for the hard data measures-- rank at end of service, and score in MOS training and disciplinary conduct-- for each group are shown in Appendix 5. The data show a considerable distribution of end-of-service rank, a fair distribution of MOS training scores, and a relatively low frequency of actual disciplinary violations.

Reliabilities for both questionnaires were computed as well. Appendix 6 shows the reliabilities for the SPPE questionnaire and its sub-scores both for combat and non-combat soldiers evaluated during routine service. Appendix 7 shows SCPE overall and sub-score reliabilities for combat soldiers after they have participated in combat. All questionnaire scores, and almost all the sub-scores computed, demonstrated acceptable reliabilities. While the scales met internal consistency standards, the stability of the short scales was not addressed.

Combat Soldiers In Routine Service: Characterization, Construct Structure and Specific Functional Relationships

   1. <u>Factor analysis results</u> - A Principal Component Factor Analysis of the SPPE for combat soldiers evaluated during their routine service was performed, using an oblimin rotation[2]. The rotation yielded a two factor solution which explained 65.8% of the variance, with one dominant factor explaining 59% of the variance, and another, secondary factor explaining an additional 6.8% of the variance. The two factors were significantly correlated (r= .62; p<.001). The variables and their loadings are shown in Table 1.

Table 1

SPPE Factor analysis for combat soldiers rated during their routine service - factor loadings (N= 1279)

Item No.	Description	Factor Loadings Factor 1	Factor 2
18	Prospects for graduating officer training	.96	-.11
5	Potential beyond NCO	.94	-.08
4	Potential for NCO	.91	-.12
17	Prospects for graduating NCO training	.89	-.06
16	Copes himself before turning over problems	.71	.12
3	Can be relied upon in combat	.68	.07
1	Technical-and-tactical abilities	.66	.17
2	Adjust to military	.61	.29
15	Positive initiative	.58	.35
14	Adjusts socially	.57	.28
6	Shirks from work and duties*	.03	.76
11	Late for work and musters*	-.14	.72
12	Military discipline	.02	.71
10	Has Interest in work	.28	.59
8	Team work and cooperation	.35	.57
9	Fully accomplishes his tasks	.38	.54
13	A good soldier	.42	.52
7	Useful and contributing	.42	.51

* Item scale was recoded

   [2]The relatively high correlations among the questionnaire items suggested the use of oblique rotation. Oblimin rotation was preferred because it represents both the orthogonal and (highly) correlated factor axes (Harman, 1976).

The variables with the highest loadings on the first factor were the promotion related variables (18, 5, 4, 17), whereas coping, prospects for combat performance and professionalism (16, 3, 1) showed lower loadings. Adjustment and initiative (2, 15) had the lowest loadings on the first factor. Consequently, the first factor was called "Promotion, professionalism and combat". The variables with the highest loadings on the second factor were related to work regimen (6, 11), to disciplinary conduct (12), and to other functional aspects of every day performance (10, 8, 9, 13, 7). Thus, it was called "Work regimen and functional performance".

2. <u>SSA results</u>[3] - A .14 S-Stress value of a two dimensional Smallest Space analysis of the full sample yielded the spatial configuration shown in Figure 1, with 94% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. A three-dimensional analysis yielded a similar spatial pattern, with an S-Stress coefficient of .09 and 97% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. An SSA that analyzed that part of the sample that had no missing values yielded a similar configuration (see Appendix 8) with a .14 S-Stress value explaining for 94% of the variance of the scaled data in the partition accounted for by their corresponding spatial distances.

The spatial representation of the variables indicates the following inferences: (1) variable 2 ("Adjustment to military") is clearly at the center of the spatial configuration formed, suggesting that it has the highest interrelationships with the other variables. It appears that variable 13 ("Good soldier") would fall in the same category. (2) The configuration of the other variables suggest their segmentation to 5 contiguity areas (II to VI) implying that variables within every group follow a common respective rule or consistency.

A search after rules that may explain the resulting groupings and their configuration reveals the following: (1) variables 2 and 13 suggest an overall evaluation of the soldier with regard to his service in general; (2) The variables in group II represent professional technical-and-tactical and promotion perspectives; (3) Variable 3 refers to the prospects for the functioning of the soldier in combat; (4) Group IV consists on variables representing effort and integration in the team; (5) Group V is comprised of one variable - 12 - representing disciplined conduct and compliance to military disciplinary regulations; (6) the two variables in group VI, 6 and 11, reflect work regimen aspects.

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[3]The SSA was performed through the ALSCAL SPSS procedure (SPSS, 1989) acknowledged by Guttman as reproducing the same results as the original program (Lingoes, 1973) designed by him.

Figure 1

SPPE SSA results for the full sample of combat soldiers rated during their routine service
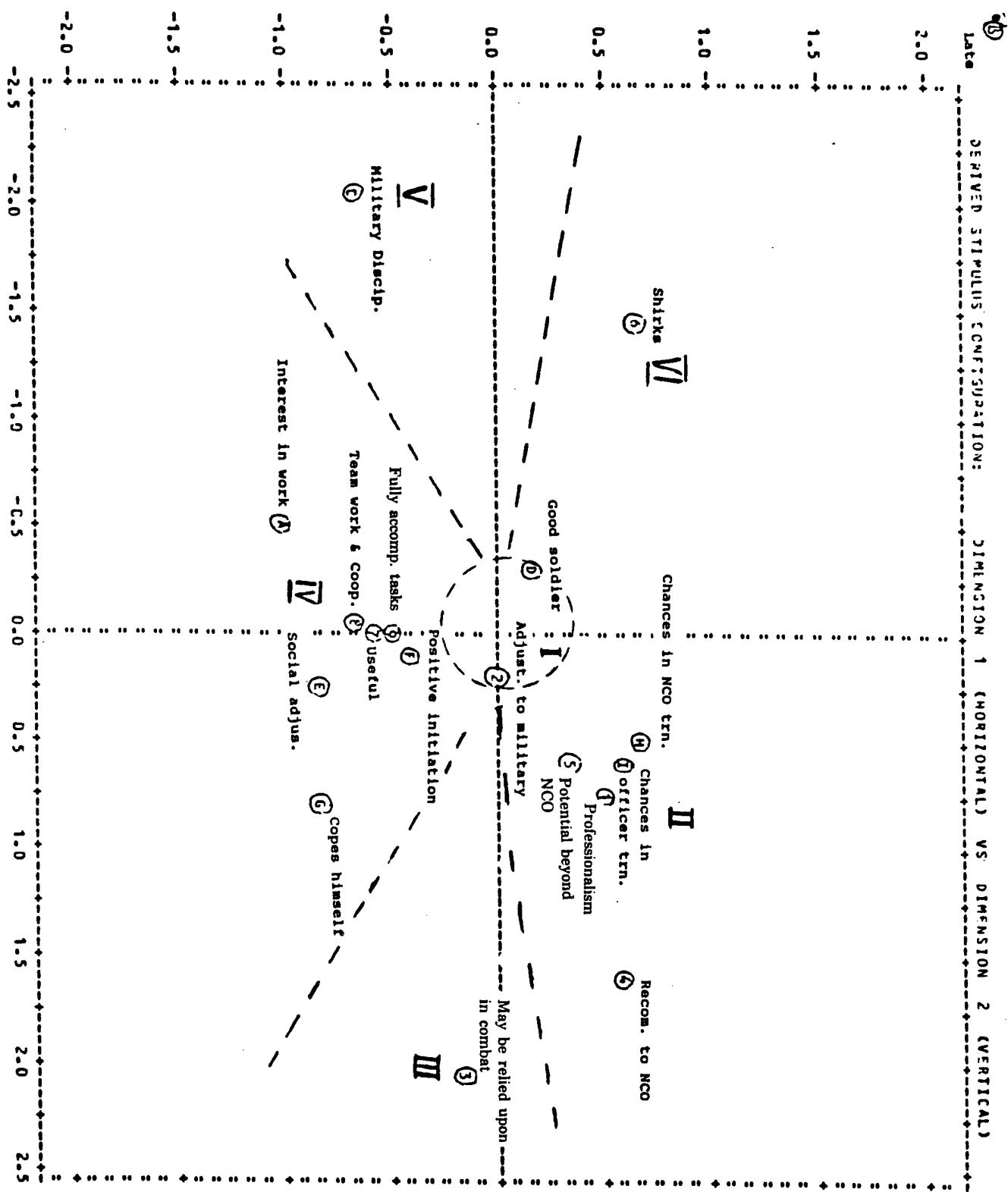
These results suggest that every variable may be classified according to the following two parameters: (1) whether it relates to group I, (2) if not related to group I, what rationale of those suggested by the other groups (II - IV) does it follow.

Let the two parameters be defined as Facets A and B. Thus, every variable may be identified following its classification to one of the facets. Specifically, Variables 2 and 13 represent the first facet (A) portraying a general-summative perspective of soldiers performance during peacetime service. On the other hand, each of the other variables represents one of the five specific functional aspects identified (b1 to b5) as representative of the second facet (B): professionalism-and-promotion (b1), perspectives for combat functioning (b2), effort and integration in team (b3), work regimen (b4), and (b5) - military discipline.

Following this classification, every variable can be identified according to the combination of the groups it represents. Table 2 presents the derived classification of the items into their respective groups.

The lawfulness identified suggest a possible Circumplex hypothesis, where every facet has a different direction in the spatial configuration. In this case these are a segmenting five-element facet B encircling a one element facet A. Such a configuration may also suggest the existence of a more sophisticated facet hypothesis (see discussion below).

3. SPPE combat soldiers' Facets and factors intercorrelations - The resulting factors and the facet elements specified were defined as additional scores. The scores represent the average of the scores of the items assigned to each factor or facet element. Table 3 shows the intercorrelations between the factors and the facets identified for combat soldiers during routine service.

While the correlations between the two factors, and the Summative-conduct and Functional/Effort-and-integration-in-team elements are considerably high, medium-range correlations portray the interrelationships between the other Functional elements (b2-b5) as well as their correlations with the two factors and with the Summative and with the Functional/Effort-and-integration-in-team elements. As expected, the factors and facets correlate according to their item composition: factors and facets that comprise more identical items correlate higher than those having fewer identical items.

Table 2

SPPE facet conceptualization for combat sample rated during routine service and consecutive item questionnaire classification

Facets and elements	Variables
A Summative-conduct	
a1	Va2 - Adjust to military
	Va13 - Good soldier
B Functional-specific	
b1 Functional-specific/	
Effort and integration in team	
	Va7 - Useful and contributing
	Va8 - Team work and cooperation
	Va9 - Fully accomplishes his tasks
	Va10 - Has interest in work
	Va14 - Social adjustment
	Va15 - Positive initiative
	Va16 - Copes himself
b2 Functional-specific/	
Professionalism and promotion	
	Va1 - Technical-and-tactical
	Va4 - Recommend to NCO
	Va5 - Has potential beyond NCO
	Va17 - Chances in NCO training
	Va18 - Chances in officer training
b3 Functional-specific/	
Work regimen	
	Va6 - Shirks from work and duties
	Va11 - Late to work and musters
b4 Functional-specific/	
Disciplinary conduct	
	Va12 - Military discipline
b5 Functional-specific/	
Functioning in combat	
	Va3 - May be relied upon in combat

Table 3

Intercorrelations* between the factors and the facet elements identified for combat soldiers rated during their routine service (N= 1279)

Factor/ Facet elements	1	2	3	4	5	6	7	8
1. Factor 1 - Promotion, professionalism and combat	-							
2. Factor 2 - Work regimen and functional performance	.79	-						
3. a1 - Summative-conduct	.84	.86	-					
4. b1 - Functional-specific/ Effort and integration in team	.87	.91	.83	-				
5. b2 - Functional-specific/ Professionalism & promotion	.98	.72	.76	.77	-			
6. b3 - Functional-specific/ Work regimen	.54	.79	.58	.57	.50	-		
7. b4 - Functional-specific/ Discipline	.50	.71	.61	.56	.46	.49	-	
8. b5 - Functional-specific/ Combat functioning prospective	.71	.59	.64	.62	.62	.38	.57	-

* All correlations are significant at .001 level and below.

4. <u>Specific functional relationships</u> - The factors revealed, as well as the SSA facets, elements and combinations derived suggest a global representation of the aspects characterizing the performance, conduct and image of combat soldiers during peacetime and routine service. The analysis of the intercorrelations among the items, the factor and facet scores, and the objective performance measures considered suggest, however, an additional insight into the meaning of each item as well as regarding the interrelationships among the different aspects representing combat soldiers' peacetime performance. A thorough analysis of the findings regarding the intercorrelations between the SPPE items, the factor and facet scores and hard data measures is outlined in Appendix 9. The intercorrelation matrice itself is presented in Table A in that Appendix.

In order to further explore the relationships among the variables, each variable was treated in turn as a criterion measure. The rest of the variables were then regressed on it. In order to avoid accidental differences, the r square procedure (presenting regression results of every given combination of any defined number of variables on the independent variable) was employed. Table B in Appendix 9 presents a summary of regression results.

Combat Soldiers In Battle and In Fight: Characterization, Construct Structure And Specific Functional Relationships

1.   Factor analysis results - A principal Component Factor Analysis of the SCPE for combat soldiers who were evaluated shortly after participating in combat was performed with an Oblimin rotation (see comment [1] above).   The rotation yielded a two factor solution which explained 73.4% of the variance, with one dominant and another secondary factor respectively explaining 66% and 7.4% of the variance.   The two factors were significantly correlated (r= .67; p<.001).   The variables and their loadings are shown in Table 4 below.

Table 4

SPPE Factor analysis for combat soldiers rated after combat - factor loadings
(N= 594)

Item No.	Description	Factor Loadings Factor 1	Factor 2
1	Calm and collected	.97	-.14
2	Courage and coping with dangers	.94	-.09
5	Operational functioning not impaired	.88	-.13
6	Was "sticking to the goal"	.82	.12
8	Adjusting to difficult conditions	.71	.15
3	Cooperating and getting along in squad	.67	.23
9	May be relied upon in combat	.66	.32
4	Fully accomplished his mission	.64	.30
11	Overall functioning during fighting	.63	.34
10	Choose for future combat missions	.56	.42
17	Performance prior to combat	-.08	.91
16	Potential beyond squad leader	.02	.85
15	Recommend to squad leader	.12	.78
14	Technical-and-tactical abilities	.09	.77
7	Following discipline regulations	.33	.44

All the variables loading highest on the first factor are clearly related to the functioning of the soldier during combat, thus this factor was called "Combat Functioning".   The secondary factor identified represents the perspectives of past performance, future promotion prospectives and professional abilities.   Thus it was named "Routine functioning and promotion".

2. <u>SSA results</u> - A .15 S-Stress value of a two dimensional Smallest Space analysis of the full sample yielded the spatial configuration shown in Figure 2, with 95% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. A three-dimensional analysis yielded a similar spatial pattern, with an S-Stress coefficient of .08 and 96% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. An SSA that analyzed that part of the sample which had no missing values yielded a similar configuration (see Appendix 10) with a .12 S-Stress value explaining for 93% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances.

An examination of the spatial configuration of the variables leads to the following inferences: (1) the variables group into five areas, where one group (III) dominates the center of the chart and the other four (I, II, IV, V) are polarized to the periphery, forming four contiguity regions in four respective sections of the two dimensional space. Such a configuration may suggest that each group has something in common that differentiates it from every other group; (2) with one exception (the distance between the variables 11-4 vs. the distance between the variables 4-8) the areas formed are also distinct (the items in every group are closer to one another than to items in other groups); (3) while variables in groups I - III are close to one another suggesting high interrelationships, group IV variables show greater relative dispersal; (4) group III is located in the middle of the spatial arrangement, thus showing the highest relationship with each of the other groups (the one that best represents all the others).

A search after a lawfulness that will explain the spatial configuration found reveals the following insights: (1) The variables in group I represent various professional and technical-and-tactical aspects involved in combat performance; (2) The variables in group II reflect the sense of determination and control shown during fighting; (3) While the variables in group III reflect general and summative evaluations of the performance during fighting, the variables in the other groups represent specific functional aspects of that performance; (4) An additional differentiation among the variables comprising group III may be suggested. Accordingly, Variable 10 ("Choose for future combat missions") represent future prospects of the performance, while the degree to which the soldier may be relied upon in combat (Variable 9) and the evaluation of his overall functioning (Variable 11) reflect summative evaluations of the soldier's functional and technical-and-tactical related performance; (5) Group IV includes variables representing professional, technical-and-tactical and promotion perspectives; (6) The discipline perspective (section V) is represented by one item (Variable 7).

The results suggest that every variable may be classified according to two parameters: (1) whether it relates to group III, or instead to one of the other four

groups identified; (2) The rationale of which of the sub-groups suggested for group III and of which of the groups I, II, IV, V does it follow.

Let each of the attachments specified by parameter (1) above represent two distinct elements of one facet (A) representing combat performance: (1) a1 - representing general-summative items; (2) a2 - representing functional-specific items. Let the two perspectives comprising group III, and the additional four peripheral groups which were identified, represent four distinct elements of a second facet (B) representing the performance in combat: (1) b1 - items representing technical-and-tactical abilities; (2) b2 - items representing determination and control; (3) b3 - items representing professionalism, promotion, and general prospects of the soldier's service; (4) b4 - items representing adherence to military regulations.

Figure 2

SCPE SSA results for the full sample of combat soldiers rated after combat
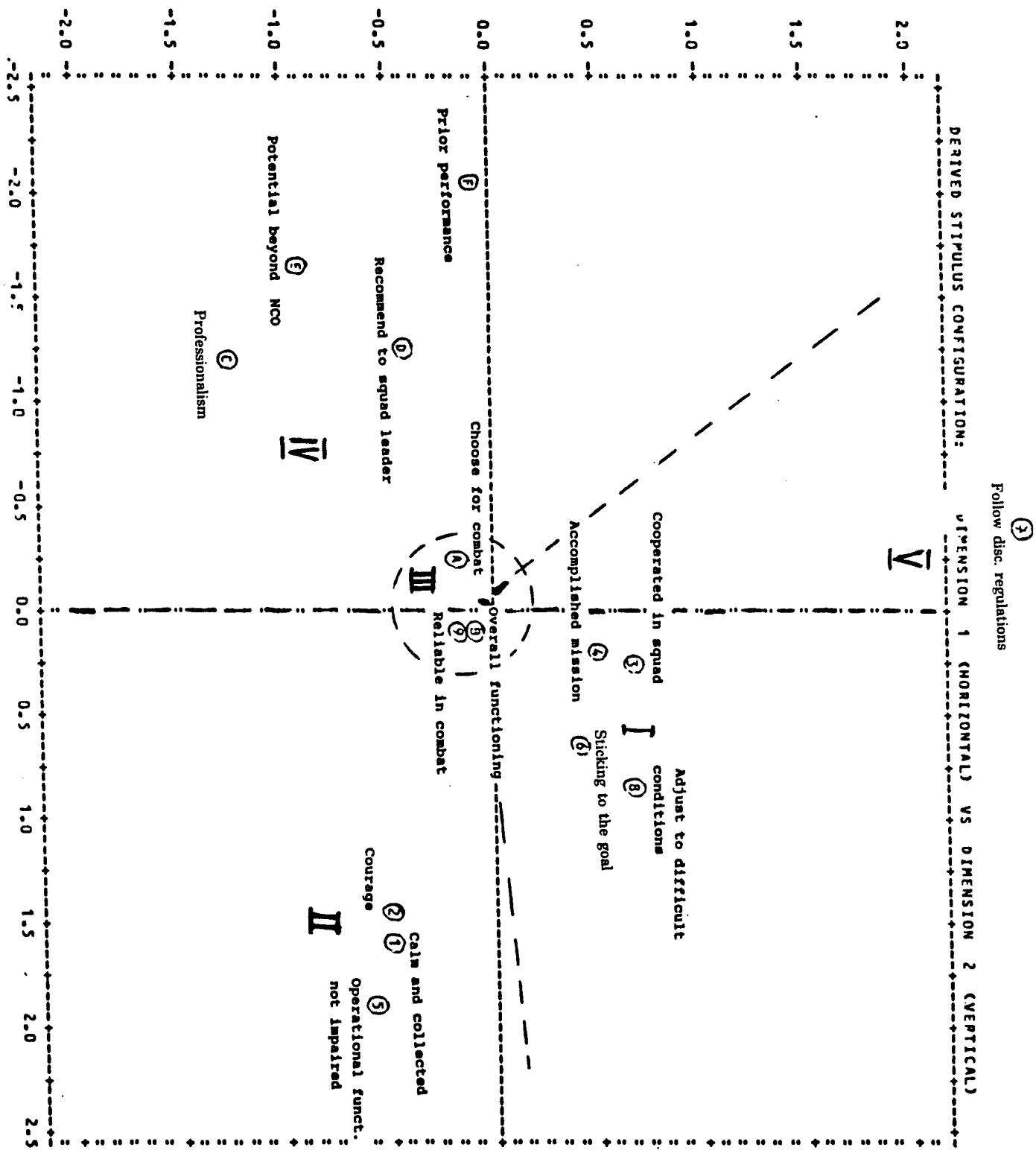
The pattern identified above follows a Radex SSA hypothesis (Zur & Zevulun, 1979). As described above, such hypothesis assumes the existence of one facet which polarizes the variables (in our case this is clearly facet A), and another facet which segments them (facet B above). Consequently, a new semantic representation may be projected to the questionnaire items, one which redefines each item according to the combination of the two facet elements it represents. Table 5 presents the derived classification.

Table 5

SCPE facet Radex conceptualization for combat sample rated after combat and consecutive questionnaire classification

Facets and Elements	Items
a1b1 Summative-general/ Technical-and-tactical	Va9 - May be relied upon in combat Va11 - Overall functioning during fighting
a1b2 Summative-general/ Determination-and-control	---
a1b3 Summative-general/ Performance, professionalism and promotion perspectives	Va10 - Choose for future combat missions
a1b4 Summative-general/ Discipline	---
a2b1 Functional/ Determination-and-control	Va1 - Remained calm and collected Va2 - Showed courage and readiness to cope with dangers Va5 - Operational functioning was not impaired
a2b2 Functional/ Technical-and-tactical	Va3 - Cooperated and got along with other squad members Va4 - Fully accomplished his part of the mission Va6 - Was "sticking to the goal" Va8 - Adjusted to difficult conditions
a2b3 Functional/ Performance, Professionalism and promotion perspectives	Va14 - The technical and tactical abilities of the soldier Va15 - Recommend as squad leader Va16 - Has the potential to go beyond squad leader level Va17 - performance prior to combat
a2b4 Functional/ Discipline	Va7 - Followed discipline regulations

3. <u>SCPE combat soldiers' Facet combinations and factors intercorrelations</u> -
The resulting factors and the facet elements specified were defined as additional
scores. The scores represent the average of the scores of the items assigned to each
factor or facet element. Table 6 shows the intercorrelations between the factors
and the facets identified for the combat soldiers evaluated after fighting.

Table 6

Intercorrelations* between the factors and the facet elements identified for combat soldiers rated after
combat (N= 594)

Factor/ Facet Elements	1	2	3	4	5	6	7	8
1. Factor 1 - Combat Functioning	--							
2. Factor 2 - Routine functioning & promotion	.80	--						
3. a1b1 - Summative-general/ Technical-and-tactical	.94	.80	--					
4. a1b3 - Summative-general/ Performance-and-promotion perspectives	.89	.78	.89	--				
5. a2b1 - Functional/ Determination-and-control	.92	.64	.79	.73	--			
6. a2b2 - Functional/ Technical-and-tactical	.96	.79	.87	.82	.83	--		
7. a2b3 - Functional/ Performance, Professionality and promotion perspectives	.76	.98	.77	.76	.62	.74	--	
8. a2b4 - Functional/ Discipline	.64	.72	.62	.59	.50	.68	.58	--

* All correlations are significant at .001 level and below.

The two factors considerably intercorrelate. While both summative element variables (Technical-and-tactical and Performance-and-promotion) show high correlations with all the variables, the functional-specific element variables show medium-range intercorrelations. Though higher for the combat functioning factor, except for the discipline perspective, both factors show high correlations with all facet elements' combinations.

Although most SCPE elements combinations have variables representing them, two have not. These are the two summative combinations a1b2 and a1b4. Following the rationale that defines these combinations variables such as "Generally remains calm and collected in stressful situations" would have represented a1b2, and variables such as "Shows general compliance with military regulations and orders" would have represented a1b4. SSA conceptualizations allows for specific expectations as to the spatial configuration would these variables have been administered. According to the Radex hypothesis suggested these variables would have been positioned together with the other Summative-general items and within the respective sections representing each of them.

4. Specific functional relationships - Also with regard to combat soldier performance in battle and in fight a detailed analysis of the intercorrelations among the items, the factor and facet scores, and the objective performance measures considered suggest an additional insight into the meaning of each item as well as regarding the interrelationships among the different aspects representing combat soldier performance in battle. A detailed analysis of that kind may add to the global information regarding the representation of the aspects characterizing the performance, conduct and image of combat soldiers provided by the factors and facets identified. A thorough analysis of the findings regarding the intercorrelations between the SCPE items, the factor and facet scores and hard data measures is outlined in Appendix 9b. The intercorrelation matrice itself is presented in Table C in that Appendix.

In order to further explore the relationships among the variables, each variable was treated in turn as a criterion measure. The rest of the variables were then regressed on it. In order to avoid accidental differences, the r square procedure (presenting regression results of every given combination of any defined number of variables on the independent variable) was employed. Table D in Appendix 9b presents a summary of these regression results.

Table 7

Intercorrelations* between SPPE items and sub-scores and hard data measures and SCPE items and sub-scores (N = 95)

COMBAT (SCPE) \ ROUTINE (SPPE)	Summative-conduct: a1			Functional-specific/ Effort and integration in team: b1								Funct./Professionalism Profe.& promot. b2		
	Adjust Va2	Team work Va13	a1	Useful Va7	Team work Va8	Accomp. tasks Va9	Work interes Va10	Social adjust. Va14	Posit. initiat Va15	Copes himself Va16	b1	b2	Profes. ability Va1	MOS score
CVa9 "May be relied upon in combat"	.34	.43	.41	.41	.37	.43	.36	.25	.46	.46	.46	.43	.33	-.01*
CVa11 "Overall functioning"	.44	.50	.48	.50	.53	.54	.46	.39	.51	.40	.56	.47	.35	-.03*
a1b1 - Summative/ Technical & tactical	.41	.49	.48	.48	.47	.51	.43	.33	.52	.45	.54	.47	.36	-.04*
a1b3 - Summative/ Performance & Promotion(CVa10)	.46	.53	.52	.47	.52	.52	.45	.41	.51	.44	.56	.47	.36	.08*
CVa1 "Calm & collected"	.34	.44	.41	.41	.44	.37	.36	.30	.47	.45	.54	.38	.28	-.04*
CVa2 "Courage & readiness to cope with danger"	.38	.47	.45	.49	.48	.52	.47	.39	.50	.41	.45	.45	.33	.00*
CVa5 "Operational functioning not impaired"	.05*	.16*	.11*	.25	.13*	.20*	.20*	-.02*	.16*	.22	.19*	.08*	.05*	-.05*
a2b1 - Functional/ Determination & control	.28	.40	.36	.44	.40	.41	.39	.24	.42	.37	.45	.34	.24	-.03*
CVa3 "Cooperated in squad"	.29	.40	.37	.37	.42	.42	.34	.33	.42	.29	.43	.35	.26	-.03*
CVe4 "Fully accomplished his part in mission"	.35	.45	.42	.41	.41	.46	.32	.35	.47	.43	.48	.45	.33	-.02*
CVa6 "sticking to the goal"	.37	.45	.44	.45	.44	.45	.38	.45	.45	.40	.49	.43	.33	.03*
CVa8 "Adjusted to difficult conditions"	.43	.46	.47	.47	.44	.40	.42	.32	.50	.37	.49	.38	.27	-.15*
a2b2 - Functional/ Technical & tactical	.40	.40	.48	.48	.48	.49	.41	.37	.52	.42	.53	.45	.33	-.04*
a2b3 - Functional/ Perf., profess. & promot.	.48	.49	.51	.45	.48	.51	.42	.40	.49	.49	.55	.49	.41	.16*
CVa14 "Technical-and-tactical ability"	.44	.43	.46	.40	.46	.48	.33	.33	.43	.45	.49	.40	.36	.25
Score in MOS course	.12	.14	.13	.13	.13	.12	.11	.14	.14	.12	.14	.05*	.13	-
CVa15 "Recommend to NCO"	.44	.45	.47	.41	.42	.49	.39	.35	.45	.48	.51	.47	.36	.13*
CVa16 "Recommend to officer"	.43	.42	.45	.38	.41	.42	.38	.42	.40	.38	.47	.45	.36	.02*
Actual rank at end of service	.21	.21	.19	.22	.15	.19	.12	.13	.14	.21	.18	.18	.17	-.05*
CVa17 "prior performance"	.47	.50	.51	.49	.49	.50	.42	.36	.53	.49	.55	.49	.42	.22
a2b4 - Functional/ Disciplinary conduct (CVa7)	.24	.43	.35	.39	.38	.37	.32	.19	.35	.21	.37	.21	.13*	-.06*
Actual No. of disciplinary violations	-.16	-.14	-.08	-.14	-.13	-.08	-.13	-.07*	-.05*	-.14	-.14	-.12	-.07*	-.12*
Factor 1 - Combat Functioniong	.40	.51	.48	.50	.49	.51	.44	.35	.52	.44	.55	.46	.34	.00*
Factor 2 - Routine Functioning & Promotion	.47	.51	.52	.47	.50	.52	.43	.39	.50	.47	.55	.47	.38	.13*

Except for those identified * all correlations are significant at .05 level and below

(Table continues)

The Relationship Between Combat Soldiers' Peacetime Performance and Their Performance In Battle and Fight

The data base established provides an opportunity to shed light on the relationship between combat soldiers' performance during routine service and their performance in battle and fight. Evaluations of combat soldiers' performance in both peacetime and combat were available for a sample of 95 subjects. In addition to performance ratings the routine parameters studied included hard data measure measurements representing soldiers' achievement in the Military Occupational Specialty professional course he undertook in the beginning of his service, the aggregate of a soldier's disciplinary violations and their rank at end of service. This section will present the findings on peacetime-combat performance relationship.

Table 7 shows the intercorrelations among SPPE and SCPE items and items' sub-scores. In order to avoid confusion between the two sets of item questionnaires SCPE items were identified with the initials "CVa" (Combat Variables), while only "Va" precedes every SPPE variable. Relationships between SPPE and SCPE items and sub-scores were studied also through regressions. Each SCPE item was treated in turn as a criterion measure and the other SPPE items were then regressed on it. In order to avoid accidental differences the r square procedure, presenting regression results of every given combination of any defined number of variables, was employed. A summary of the regression results is presented in Appendix 11. SCPE correlations with the hard data representing training achievements, disciplinary conduct and rank at end of service are presented as well.

An overview of the correlation matrices suggests that peacetime conduct and combat performance show meaningful relationships characterized by moderate, and even higher-than- moderate, correlations.

Overall, the peacetime variables correlating most with, or contributing most to the regression on combat soldier performance during fighting, are the following: (1) the Summative facet (A) variable "good soldier" (Variable 13), (2) The variables "team work and cooperation" (8), "fully accomplishes tasks" (9), and "positive initiative" (15) of the Functional/ Effort-and-integration-in-team element (b1), (3) and the variables representing NCO promotion perspective, mainly 17 but also 4, which are related to the Functional/ Professionalism-and-promotion element (b2).

Of considerable interest are the SPPE elements and variables which show the lowest relative correlations with performance in combat. These are: the Functional/ Disciplinary conduct element (b4; Variable 12), the variables representing the Functional/ Work-regimen element (b3; Variables 6 and 11), the

Table 7 (continued)

Intercorrelations* between SPPE items and sub-scores and hard data measures and SCPE items and sub-scores (N = 95)

| ROUTINE (SPPE) | Promotion | | | | | | Functional/ Work regimen: b3 | | | Functional/ Discip.: b4 | | Funct./ Combat b5 | Factor 1 | Factor 2 |
| | NCO potent. Va4 | Beyond NCO Va5 | NCO trn. Va17 | Officer trn. Va18 | Sum 4,5,17,18 | Rank | Shirks Va6 | Late Va11 | b3 | Discip. Va12 | No. Violat. | Va3 | Promot. profess combat | Work regimen Perf. |
COMBAT (SCPE)														
CVa9 "May be relied upon in combat"	.44	.36	.42	.36	.43	.16*	.39	.27	.37	.25	-.09*	.40	.45	.45
CVa11 "Overall functioning"	.52	.38	.46	.41	.48	.25	.46	.40	.47	.44	-.09*	.43	.51	.59
a1b1 - Summative/ Technical & tactical	.50	.39	.46	.41	.48	.21	.45	.35	.44	.36	-.10*	.44	.51	.55
a1b3 - Summative/ Performance & Promotion(CVa10)	.51	.37	.47	.40	.48	.26	.42	.30	.40	.41	-.13*	.44	.52	.56
CVa1 "Calm & collected"	.38	.32	.36	.34	.38	.12*	.48	.37	.47	.29	-.13*	.33	.41	.49
CVa2 "Courage & readiness to cope with danger"	.45	.40	.38	.43	.46	.22	.46	.30	.42	.34	-.06*	.46	.49	.54
CVa5 "Operational functioning not impaired"	.05*	.10*	.06*	.09*	.09*	-.02*	.20	.08*	.15	.08*	-.03*	.12*	.10*	.19*
a2b1 - Functional/ Determination & control	.32	.31	.30	.33	.34	.11*	.43	.28	.39	.26	-.08*	.34	.37	.46
CVa3 "Cooperated in squad"	.31	.24	.39	.32	.36	.08*	.31	.21	.29	.24	.04*	.30	.38	.42
CVa4 "Fully accomplished his part in mission"	.43	.37	.43	.40	.45	.16*	.34	.29	.35	.29	-.03*	.37	.48	.46
CVa6 "Sticking to the goal"	.42	.36	.42	.38	.43	.19*	.38	.31	.38	.12	-.02*	.33	.45	.48
CVa8 "Adjusted to difficult conditions"	.42	.31	.37	.32	.38	.21	.43	.30	.41	.34	-.07*	.41	.43	.50
a2b2 - Functional/ Technical & tactical	.45	.36	.45	.40	.46	.18*	.41	.31	.40	.31	-.02*	.39	.49	.52
a2b3 - Functional/ Perf., profess. & promot.	.53	.42	.47	.41	.49	.27	.37	.31	.37	.30	-.06*	.46	.54	.51
CVa14 "Technical-and-tactical ability"	.47	.38	.34	.33	.39	.16*	.32	.29	.34	.31	-.10*	.41	.45	.46
Score in MOS course	.15*	.12*	.07*	.05*	.09*	-.05*	-.05*	-.10*	-.08*	-.19*	-.12*	.01*	.03*	-.05*
CVa15 "Recommend to NCO"	.48	.38	.50	.38	.48	.24	.37	.28	.36	.25	-.04*	.42	.51	.47
CVa16 "Recommend to officer"	.48	.36	.44	.38	.45	.33	.30	.29	.33	.29	-.07*	.37	.48	.54
Actual rank at end of service	.27	.21	.09*	.11*	.16*	-	.28	.22	.27	.28	-.19*	.18*	.23	.33
CVa17 "Prior performance"	.52	.42	.46	.42	.49	.22	.36	.27	.34	.28	-.02*	.50	.54	.51
a2b4 - Functional/ Disciplinary conduct (CVa7)	.26	.13*	.25	.14*	.21	.21	.33	.22	.30	.30	-.15*	.18*	.25	.14
Actual No. of disciplinary violations	-.21	-.19*	-.11*	-.13*	-.16*	-.19*	-.27	-.16*	-.24	-.32	-	-.13*	-.28	-.35
Factor 1 - Combat Functioniong	.46	.38	.44	.41	.46	.19*	.45	.33	.43	.34	-.07*	.42	.46	.50
Factor 2 - Routine Functioning & Promotion	.51	.39	.46	.39	.47	.27	.38	.31	.38	.32	-.07*	.44	.50	.50

Except for those identified * all correlations are significant at .05 level and below

professionalism related indicators (Variable 1 and the MOS course score), and the peacetime Functional/ Combat functioning perspective represented by Variable 3 (element b5).

A more detailed analysis of the peacetime aspects which best predict each of the different combat performance dimensions suggest the following inferences:

1. Predicting the SCPE Summative-general/ Technical-and-tactical combat aspect (combination a1b1, SCPE items 9 and 11) - The combined summative technical-and-tactical score is predicted best by the SPPE Functional/ Professionalism-and-promotion element (b2) item "recommend to NCO" (Variable 4), and by the SPPE Functional/ Effort-and-integration-in-team element (b1) global score, as well as by its items "performs fully" (Variable 9) and "positive initiative" (Variable 15).

The detailed results regarding each of the items of this combination show that the SPPE Summative-conduct facet (a1) item "good soldier" (13), the combined Functional/ Effort element (b1) score and its items "useful" (7) and "positive initiative" (15), and the Functional/ Professionalism-and-promotion element (b2) item "recommend for NCO" (4), are highly related to both SCPE Summative items. On the other hand, other SPPE variables relate to this SCPE summative facet differentially: "team work and cooperation" (b1; Variable 8) and "fully accomplishes his tasks" (b1; Variable 9) best predict overall combat performance (SCPE item 11), while "copes himself" (b1; Variable 16) and "chances in NCO training" (b2; Variable 17) are related highest to how can the soldier be relied upon in combat (SCPE item 9).

The above findings are generally replicated by regression results: with the exception of the SPPE Functional/ Work-regimen element (b3) item "shirks from work and musters" (6), the SPPE Functional/ Effort variables (8, 9, 17) and NCO perspective (Variable 17), contribute most to the prediction of this SCPE summative facet and its elements.

The SPPE Functional/ Effort (b1) item "social adjustment" (Variable 14) and the SPPE Functional/ Work regimen (b3) item "late for work and musters" (Variable 11) show the lowest correlations with the combined SCPE Summative/ Technical-and-tactical score, where Variables 14 and 12 ("social adjustment" and "military discipline") show the lowest correlations with the SCPE items "relied upon in battle", and the professional "technical abilities" (variable 1) - with overall combat performance.

2. Predicting the combat Summative-general/ Performance-and-promotion-perspectives (combination a1b3; item Va10) - This perspective is predicted best by

the SPPE Summative-conduct item "good soldier" (Variable 13), by the combined SPPE Functional/ Effort (b1) score and by its items "team work and cooperation" (8), "fully accomplishes tasks" (9), and "positive initiative" (15), as well as by the SPPE Functional/ Professionalism-and-promotion element (b2) item "recommend to NCO" (item 4). Regression findings suggest a refined picture where only the SPPE Summative-conduct item "good soldier (13), and the SPPE Functional/ professionalism-and-promotion item "chances in NCO training" (17) contribute to the regression on the Summative future combat perspective represented by the SCPE Variable 10.

The variable least related to this SCPE Summative perspective is the SPPE Functional/ Work regimen aspect (b3) "late to work and musters" (11).

3. Predicting the Functional/ Determination-and-control aspect of combat performance (combination a2b1, items 1, 2, 5) - SPPE variables showing the highest correlation with the combined combat Functional/ Determination-and-control score are: the Summative-conduct element (a1) item "good soldier" (13), the Functional/ Effort element (b1) items "useful" (7), "team work and cooperation" (8), "fully accomplishes his tasks" (9), and "positive initiative" (15), and the Functional/ Work regimen element (b3) item "shirks from work and musters" (6).

Except, possibly, for the high correlation between "positive initiative" (item 15), and both SCPE variables "calm and collected" (1) and "courage and readiness to cope with dangers" (2), no specific trend characterizes the variables related most closely to the Determination-and-control items.

The above direction of the findings is well replicated by regression results where the SPPE Variables 7, 9, 15, 4 and 6 contribute most to the prediction of the Determination-and-control combat aspect. Still, three variables show a negative value when regressed on the Determination-and-control element, these are: "relied upon in combat" (3), "follows military discipline regulations" (12), and "social adjustment" (14).

The variables showing the lowest correlations with aspects of this element are the following SPPE Functional facet elements' items: the Effort (b1) item "social adjustment" (14), the Professionalism-and-promotion (b2) item "professionalism" (1), the Disciplinary conduct (b4) item (12), and the Work regimen item (b3) "late for work and musters" (11).

Of the different SCPE Determination-and-control variables, the considerably lower correlations of all peacetime aspects with "operational functioning was not impaired" (Variable 5) is notable.

4. Predicting the Functional/ Technical-and-tactical combat aspect (combination a2b2, items 3, 4, 6, 8) - The combined functional technical-and-tactical score is predicted best by the SPPE Summative-conduct element item (a1): "good soldier" (Va13), by the combined Effort element (b1) score and by its item "positive initiative" (Va15). Though not correlating highest with the combined Technical-and-tactical score, "fully accomplishes tasks" (Variable 9) is highly correlated with most of the aspects comprising this element.

Except for the contribution of Variable 6 ("shirks from work and musters") to SCPE variable 8 ("adjust to difficult situations") the above findings are well replicated in the regressions, where Va8, Va9, Va13, Va15 and Va17 contribute most to the regressions on the different Functional/ Technical-and-tactical aspects. The analysis also shows that Variables 12 ("military discipline") and 5 ("recommend to officer") enter the regression with negative Betas.

The items related least to the combined SCPE Functional/ Technical-and-tactical combat aspects are the Professionalism-and-promotion element (b2) item "professionalism" (Variable 1), the Work regimen element (b3) item "late to work and musters" (Variable 11), and the Disciplinary-conduct element (b4) item "military discipline" (Variable 12).

5. Predicting the Functional/ Performance-professionalism-and-promotion combat perspectives (combination a2b3, items 14, 15, 16, 17) -

a. Predicting the professional abilities shown in combat - The professional technical-and-tactical abilities shown by the soldier in the battlefield (Variable 14) are best predicted by the Effort element (b1) combined score and by its items "team work and cooperation" (8), "fully accomplishes tasks" (9), as well as by "recommend to NCO" (Variable 4). These findings are fully replicated in the regression results. The Work regimen (b3) item "late for work and musters" (11) shows the lowest correlations with Variable 14.

b. NCO and officer training and promotion perspectives (Variables 15 and 16) - While SPPE combined Effort score and NCO perspectives (Variables 4 and 14) highly correlate with both SCPE promotion perspectives, the SPPE combined promotion score is related most to officer promotion prospects (Variable 16) evaluated in view of the performance during combat. The lowest correlations with both perspectives are shown by the peacetime elements: Disciplinary conduct (b4) "military discipline" (item 12) and Work regimen element (b3) item "late for work and musters" (Va11).

c. Regression results do not fully follow the findings described above: while the contribution of NCO peacetime prospects to the regression on SCPE NCO

and officer combat-related prospects proves to be dominant, the Summative conduct element (a1) variable "good soldier" (Variable 13) and the Effort element (b1) item "fully accomplishes his tasks" (Variable 9) additionally contribute to regressions on both combat-related promotion perspectives.

   d. Retrospectively evaluated past performance (variable 17) - In this SCPE item commanders were asked to evaluate their soldier's performance prior to the combat. A variety of SPPE aspects correlate highly with the retrospective evaluation of the functioning of the soldier prior to combat. The SPPE Summative-conduct item "good soldier" (13), the combined Functional/ Effort score and its items "fully accomplishes his tasks" (9) and "positive initiative" (15), and the Functional/ Professionalism-and-promotion element "recommend to NCO" (4) and the Functional/ Combat perspective element "may be relied upon in combat" (3), all show the highest relative correlations with variable 17. Regression results, though, show that the aspects contributing most to the multiple correlation with Variable 17 are two of the SPPE Functional/ Effort element (b1) items: "team work and cooperation" (8) and "copes himself" (16).

Variable 11 and Variable 12 prove to correlate lowest also with Variable 17.

The Validity of Selection Measures In Predicting Combat Soldiers' Performance During Routine Service and In Battle and Fight

The differential validities selection composites and their sub-scores achieve in predicting combat soldier performance during routine service and in fighting is a major objective of this study. Although the intersecting group suggests an interesting setting for studying this objective, missing data further reduced the size of the intersecting group (originally N = 95) and made data analysis within this group risky. The PSC and its sub-scores were there for correlated with the SPPE and with the SCPE within the respective research groups rated by each questionnaire. Hence, the results provide data regarding selection scores' validity in predicting performance ratings within each situation, fighting and routine. While suggesting indications for the relative efficiency of the composites and scores employed in predicting item questionnaires beyond these two groups, a direct comparison of this kind is not possible.

Since soldiers undertake the first professional course in their Military Occupational specialty (MOS) during military service beginning stages, the score they achieve in that score may be treated as another predictor. Consequently, this score was added to the selection predictors studied.

Table 8 presents the correlations between the PSC and its sub-scores and soldier performance ratings within each of the combat research groups-- the combat soldiers evaluated during routine assignments, and those evaluated after combat. The results showed in Table 8 lead to the following inferences:

(1) The PSC and all its sub-scores achieve significant, even though moderate, toward all the SPPE routine performance aspects. Although still being significant, the PSC as well as its sub-scores show considerably lower correlations with the SCPE combat performance aspects rated. Schooling is exceptional in this regard: only few of its correlations with SCPE items are significant.

(2) Overall, cognitive ability (CAS) shows the highest correlations with the different SCPE aspects rated. Consequently, it seems that PSC prediction of combat performance ratings could have been improved would CAS been weighted higher in the composite.

(3) Unlike combat performance, the PSC predicts SPPE aspects of combat soldier routine performance better than its sub-scores. PSC sub-scores relative efficiency in predicting combat soldier routine performance is different as well. Potential for Adjustment (PA) proves to correlate higher than the cognitive ability score (CAS) with aspects of routine performance.

Table 8

PSC, CAS, PA, Schooling and MOS Training Score Correlations with SPPE and SCPE Items and Scores Within Each of the Combat Soldier Routine and Fighting Research Groups (N Combat Routine Sample = 1294; N Combat Fighting Sample = 594)

Routine Performance - SPPE Item Description Number	PSC*		CAS*		PA*		SCHOOL		COURSE*		Combat Performance - SCPE Item Description Number
	Rutn	Combat	Rutn	Combat	Rutn	Combat	Rutn	Combat	Rutn	Combat	
Va3 - (b5) may be relied upon in combat	$.13^3$	$.11^1$ $.13^2$ $.11^2$ $.12^2$ $.01^0$ $.12^2$ $.09^1$	$.11^2$	$.13^2$ $.15^3$ $.12^2$ $.11^2$ $.01^0$ $.15^3$ $-.09^1$	$.14^3$	$.14^3$ $.13^2$ $.09^1$ $.10^1$ $.07^0$ $.15^3$ $.10^1$	$.05^0$	$.05^0$ $.06^0$ $.05^0$ $.06^0$ $.01^0$ $.04^0$ $.05^0$	$.09^1$	$.11^1$ $.12^2$ $.13^2$ $.11^1$ $.10^1$ $.13^2$ $.13^2$	Va9 - May be relied upon in combat Va10 - (a1b3) Choose for future combat missions Va1 - Calm and collected Va2 - Courage and readiness to cope with dangers Va5 - Operational functioning not impaired a1b1 - Sum Vas 9, 11 a2b1 - Sum Vas 1, 2, 5
VA13 - Good soldier	$.22^3$	$.12^2$ $.21^3$	$.19^3$	$.16^3$ $.22^3$	$.18^3$	$.14^3$ $.18^3$	$.18^3$	$.03^0$ $.13^2$	$.22^3$	$.13^2$ $.21^3$	VA11 - Overall functioning during fighting Va17 - Performance prior to combat
Va2 - Adjust to military	$.24^3$	$.07^0$	$.18^3$	$.09^1$	$.20^3$	$.09^1$	$.19^3$	$.04^0$	$.17^3$	$.04^0$	Va8 - Adjusting to difficult conditions
Va8 - Team work and cooperation Va14 - Social adjustment	$.19^3$ $.18^3$	$.11^2$	$.16^3$ $.14^3$	$.12^2$	$.17^3$ $.17^3$	$.09^1$	$.12^3$ $.10^1$	$.08^1$	$.19^3$ $.13^3$	$.13^2$	Va3 - Cooperated and got along with other team members
Va1 - Technical and tactical abilities	$.26^3$	$.18^3$ $.13^2$	$.22^3$	$.22^3$ $.15^3$	$.22^3$	$.19^3$ $.12^2$	$.14^3$	$.09^1$ $.08^0$	$.21^3$	$.18^3$ $.12^2$	Va14 - Technical and tactical abilities a2b2 - Sum Vas 3, 4, 6, 8
Va4 - Recommend to NCO Va17 - Chances in NCO training Va5 - Recommend to officer Va18 - Chances in officer training ACP - Sum Vas 4, 17, 5, 18	$.31^3$ $.45^3$ $.39^3$ $.45^3$ $.45^3$	$.20^3$ $.28^3$	$.25^3$ $.32^3$ $.27^3$ $.31^3$ $.32^3$	$.20^3$ $.26^3$	$.25^3$ $.38^3$ $.34^3$ $.40^3$ $.39^3$	$.18^3$ $.29^3$	$.19^3$ $.33^3$ $.29^3$ $.34^3$ $.33^3$	$.12^2$ $.19^3$	$.13^3$ $.23^3$ $.19^3$ $.19^3$ $.21^3$	$.19^3$ $.19^3$	Va15 - Recommend as squad leader Va16 - Potential beyond squad level
Va12 - (b4) military discipline b3 - Work regimen	$.24^3$ $.22^3$	$.16^3$	$.18^3$ $.20^3$	$.15^3$	$.21^3$ $.17^3$	$.09^1$	$.22^3$ $.18^3$	$.13^2$	$.13^3$ $.12^3$	$.09^1$	Va7 - (a2b4) Following disciplinary regulations
Va6 - Skips Va11 - Late	$.20^3$ $.19^3$	$.14^3$	$.17^3$ $.18^3$	$.14^3$	$.16^3$ $.15^3$	$.13^2$	$.13^3$ $.16^3$	$.09^1$	$.13^3$ $.07^1$	$.14^2$	Va6 - Sticking to the goal
Va7 - Useful Va9 - Fully accomplishes his tasks Va16 - Copes himself before turning problems Va10 - Has interest in work Va15 - Positive initiative b1 - Functional/effort	$.19^3$ $.21^3$ $.27^3$ $.20^3$ $.21^3$ $.25^3$	$.14^3$	$.14^3$ $.17^3$ $.18^3$ $.16^3$ $.17^3$ $.19^3$	$.17^3$	$.17^3$ $.20^3$ $.25^3$ $.17^3$ $.18^3$ $.22^3$	$.13^2$	$.14^3$ $.16^3$ $.16^3$ $.17^3$ $.16^3$ $.17^3$	$.07^0$	$.16^3$ $.15^3$ $.16^3$ $.16^3$ $.13^3$ $.19^3$	$.12^1$	Va4 - Fully accomplished his part of the mission
a1 - Summative-conduct b2 - Functional/Prof. & Promotion Factor 1 - Promot, prof. & combat Factor 2 - Work regimen & functional perf.	$.26^3$ $.44^3$ $.40^3$ $.27^3$	$.26^3$ $.12^2$ $.26^3$	$.27^3$ $.31^3$ $.28^3$ $.23^3$	$.26^3$ $.14^2$ $.26^3$	$.20^3$ $.40^3$ $.36^2$ $.21^3$	$.26^3$ $.13^2$ $.24^3$	$.25^3$ $.34^3$ $.31^3$ $.25^3$	$.15^2$ $.04^0$ $.15^2$	$.21^3$ $.21^3$ $.19^3$ $.21^3$	$.22^3$ $.13^2$ $.21^3$	a2h3 - Functional/Perf, prof. & promotion Factor 1 - Combat functioning Factor 2 - Routine functioning & promotion

0 = p NS
1 = p < .05
2 = p < .05
3 = p < .01

*PSC - Primary selection composite
*CAS - Cognitive ability score
*PA - Score indicating potential for adjustment
*School - Adjusted years of schooling

(4) The composite and its sub-scores predict best prospects for promotion in both peacetime and combat groups.

(5) Schooling consistently shows the lowest correlations with the .

(6) While MOS course score correlations with SCPE items are similar to those achieved by CAS and by its sub-scores, its correlations with SPPE items are lower than those achieved by the different selection scores. The relative high correlations which the MOS score achieves with both SPPE and SCPE (routine and combat) ratings of technical-and-tactical ability provide evidence to its validity.

The Characterization, The Construct Structure And Specific Functional Relationships Portraying The Non-combat Soldier

1. <u>Factor analysis results</u> - A principal Component Factor Analysis of the SPPE for non-combat soldiers who were evaluated during their routine service was performed, using an Oblimin rotation (see comment [1] above). The rotation yielded a three factor solution which explained 67.8% of the variance, with one dominant and two secondary factors explaining, respectively, 53.6%, 7.4% and 6.8% of the variance. While the first and the second factors correlate quite highly (r= .58; p<.001), the third factor shows lower, but still significant correlations with either two (r= .30 with the first, and .25 with the second). The variables and their loadings are shown in Table 12 below.

The variables with the highest loadings on the first factor-- 8, 13, 9, 7, 10, 15, 14, and 12-- all refer to functional efforts and to social adjustment. Thus this factor was called "effort and integration in unit". The variables showing the highest loadings on the second factor are mainly the promotion- related variables (18, 5, 4, 17). In view of the additional loading of the technical-and-tactical abilities on this factor, it was called "Promotion and professionalism". The variables with the highest loadings on the third factor were clearly the work regimen items, and the factor accordingly was called "Work regimen".

2. <u>SSA results</u> - A 12 S-Stress value of a two dimensional Smallest Space analysis of the full sample yielded the spatial configuration shown in Figure 3, with 96% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. A three-dimensional analysis yielded a similar spatial pattern, with an S-Stress coefficient of .08 and 98% of the variance of the scaled data in the partition accounted for by the corresponding spatial distances. An SSA that analyzed that part of the sample that had no missing values yielded a similar configuration (see Appendix 12) with a .12 S-Stress value explaining 96% of the variance of the scaled data in the partition accounted for by their corresponding spatial distances.

The spatial configuration show a partition of the variables to a number of groups. Most of the variables are concentrated in the center of the spatial representation. In order to study a possible additional partition of these variables into sub-groups, a three-dimensional SSA was conducted. The resulting configuration (see Figure 4) followed a .08 S-STRESS coefficient with 98% of the variance of the scaled data in the partition accounted for by their corresponding spatial distances. Though generally reconstructing the two dimensional SSA results, the three dimensional analysis suggests a basis for an additional partition of the main bulk of variables into two groups (see figure 3: I and II). While it was

Table 9

SPPE Factor analysis for soldiers serving in non-combat jobs - factor loadings
(N= 2407)

| Item | Factor Loadings | | |
No. Description	Factor 1	Factor 2	Factor 3
8 Team work and cooperation	.88	-.04	-.00
13 A good soldier	.85	-.02	.09
9 Fully accomplishes his tasks	.81	.04	.02
7 Useful and contributing	.81	.04	.00
10 Has Interest in work	.80	.04	.00
15 Positive initiative	.77	.14	-.02
14 Adjusts socially	.76	.08	-.06
12 Military discipline	.72	-.16	.19
2 Adjust to military	.57	.26	.07
16 Copes himself before turning over problems	.54	.43	-.16
18 Prospective for graduating officer training	.17	.82	-.08
5 Potential beyond NCO	.17	.81	-.03
17 prospective for graduating NCO training	.20	.78	-.08
4 Potential for NCO	-.12	.73	.27
1 Technical-and-tactical abilities	.40	.47	-.02
3 Can be relied upon in combat	-.03	.45	.42
11 Late for work and musters	.07	.02	.80
6 Shirks from work and duties	.29	.01	.68

difficult to differentiate between groups I and II the other variables form three distinct contiguity regions (III, IV and V).

A search after a rationale that explains the resulting formation of the groups reveals the following inferences: (1) The variables in group I represent the effort the soldier puts in his job and his social adjustment; (2) group II consists of variables representing promotion perspectives (5, 17 and 18), professionalism (1), and adjustment and coping (2, 14 16); (3) The third group incorporates the prospects for promotion to NCO and for functioning in combat; (4) Group IV consists of the two work regimen variables (6 and 11); (5) The single Military discipline variable represents group V.

This distinct configuration of the groups implies that a simple circumplex five-facet hypothesis may explain the findings, with the five facets representing the five groups of variables described. Table 10 specifies the items according to the facets they represent.

Figure 3

SPPE SSA configuration of non-combat soldiers - 2 dimensions

DERIVED STIMULUS CONFIGURATION: DIMENSION 1 (HORIZONTAL) VS DIMENSION 2 (VERTICAL)

B Late

Shirks
6

Military Discip.
C

Accomplishes his   Interest in work
tasks
: Positive F   A   Useful
9   8   7
D InitiativeTeam work & Coop.
Good soldier
Chances in ----. Copes himself
NCO trm.   E   G
Chances in I
officer trm.   Social adjus.
S
2 Adjust. to military
Recom. to officer:
1
Professionalism

Recom. to NCO

May be Relied
upon in combat 3

-2.5   -2.0   -1.5   -1.0   -0.5   0.0   0.5   1.0   1.5   2.0   2.5

Figure 4

SPPE SSA configuration of non-combat soldiers - 3 dimensions
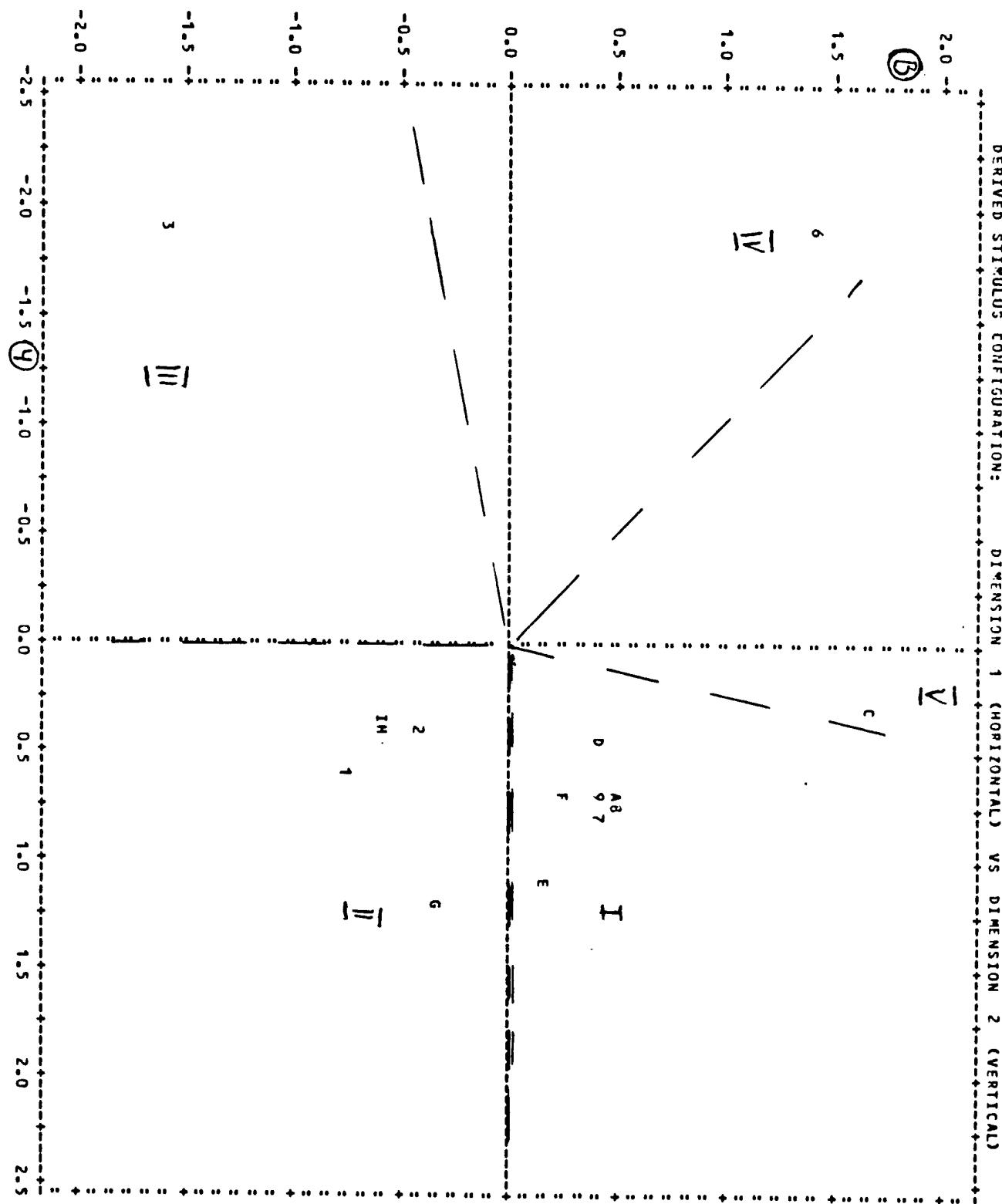
Table 10

SPPE facet conceptualization for the non-combat sample and consecutive item classification

Facets and Elements	Items
A Effort and social adjustment	
	Va7 - Useful and contributing
	Va8 - Team work and cooperation
	Va9 - Fully accomplishes his tasks
	Va10 - Has interest in work
	Va13 - Good soldier
	Va14 - Social adjustment
	Va15 - Positive initiative
B Promotion, professionalism and adjustment	
	Va2 - Adjust to military
	Va16 - Copes himself
	Va17 - Chances in NCO training
	Va18 - Chances in officer training
	Va5 - Recommend to officer
	Va1 - Technical-and-tactical abilities
C Promotion to NCO and prospects for performance in combat	
	Va4 - Recommend to NCO
	Va3 - May be relied upon in combat
D Work regimen	
	Va6 - Shirks from work and duties
	Va11 - Late to work and musters
E Military discipline	
	Va12 - Military discipline

3. <u>SPPE non-combat soldiers' Facet and factor intercorrelations</u> - Table 11 shows the intercorrelations between the facets and the factors identified for the combat soldiers who were evaluated after fighting.

Table 11

Intercorrelations* between the factors and the facet elements identified for non-combat soldiers
(N= 2407)

Factor/ Facet elements	1	2	3	4	5	6	7	8
1. Factor 1 - Effort and integration in unit	-							
2. Factor 2 - Promotion and professionalism	.74	-						
3. Factor 3 - Work regimen	.46	.43	-					
4. Facet A - Effort and social adjustment	.99	.71	.45	-				
5. Facet B - Promotion, professionalism and adjustment	.79	.96	.42	.75	-			
6. Facet C - Promotion to NCO and prospects for performance in combat	.49	.72	.33	.48	.52	-		
7. Facet D - Work regimen	.46	.43	-	.45	.42	.33	-	
8. Facet E - Military discipline	.67	.43	.36	.60	.45	.30	.35	-

* All correlations are significant at .001 level and below.

4. Specific functional aspects of non-combat soldier performance - A detailed analysis of the intercorrelations between SPPE scores-- items, factors and facets-- is presented in Appendix 13. Appendix 13 also includes the data base itself: while Table E in the Appendix shows the intercorrelation matrice, Table F shows the summary of the regressions on every SPPE item.

The Validity of Selection Measures in Predicting Non-Combat Soldier Performance

Table 12 shows the relationship between the selection scores employed and both the questionnaire and the hard data measures of non-combat soldiers performance. The results show that selection scores achieve significant correlations when aimed to predict both instrumental and evaluative measures of the performance of non-combat soldiers. The two perspectives relevant to the interpretation of the results are the predictors and the criteria. Analysis of the results in each of these regards suggest the following inferences:

1. The predictors - Though generally showing the highest validities, it seems that the Primary Selection Composite (PSC) does not optimally reflect the prediction potential of its components. Clearly, the score representing the Potential for Adjustment (PA) should get a greater weight than it gets in the present composite, since the validities it achieves are frequently higher than those achieved by the Cognitive Ability Score (CAS) composite and similar or very close to those gained by the PSC score. An interesting-- and expected-- exception to that is the prediction of the professional ability, where PA and CAS achieve similar predictions.

Another predictor which shows differential validities in predicting combat and non-combat soldier performance is Schooling. While achieving low validities in predicting soldier combat performance, Schooling achieves similar correlations to these achieved by the other elements of the composite in predicting non-combat soldier performance.

2. The criteria measures - The two pronounced results are the high validities achieved by both the evaluative and the hard data variables representing prospects for promotion, and the variability in the validities achieved.

The validities achieved in predicting the SPPE and the hard data variables may be classified into four major categories: variables gaining low predictions (.10-.20), variables gaining medium-low predictions (.21-.30), variables gaining medium predictions (.31-.40) and those gaining medium-high predictions (.41 and above).

The variables gaining low predictions are some of the Effort variables (7 - "Useful and contributing"; 8 - "Team work and cooperation"), the prospects for performance in combat (3), and the Work Regimen items (6 and 11).

Table 12

PSC, CAS, PA, and Schooling correlations* with SPPE items and sub-scores for non-combat soldier (N= 2407)

* All correlations are significant at .05 level and below

Predictor Variable	PSC	CAS	PA	School
Va7 "Useful and contributing"	.16	.13	.15	.13
Va8 "Team work and cooperation"	.19	.14	.19	.16
Va9 "Fully accomplishes his tasks"	.23	.20	.21	.18
Va10 "Has interest in work"	.23	.18	.23	.19
Va13 "Good soldier"	.21	.15	.20	.18
Va14 "Social adjustment"	.22	.15	.21	.18
Va15 "Positive initiative"	.24	.17	.23	.20
A - Effort and social adjustment	.24	.18	.22	.19
Va2 "Adjust to military"	.21	.15	.21	.16
Va16 "Copes himself"	.30	.22	.28	.24
Va1 "Technical-and-tactical abilities	.27	.24	.23	.20
Va17 "Chances in NCO training"	.50	.41	.45	.40
Va18 "Chances in officer training"	.53	.42	.46	.42
Va5 "Recommend to officer"	.47	.37	.43	.36
Va4 "Recommend to NCO"	.26	.22	.24	.21
Sum 4,5,17,18	.52	.42	.46	.41
Actual rank at end of service	.47	.34	.42	.40
Va3 "May be relied upon in combat"	.18	.14	.15	.14
Va6 "Shirks"	.20	.16	.20	.17
Va11 "Late"	.19	.12	.19	.15
D - Work regimen	.23	.17	.22	.19
Va12 - "Follows disciplinary regulations"	.24	.18	.24	.22
Actual No. of disciplinary violations	-.37	-.26	-.34	-.34
Factor 1	.26	.20	.25	.21
Factor 2	.48	.39	.42	.37
Factor 3	.23	.17	.22	.19

The other Effort variables, the adjustment and coping variables (2 and 16), the professional ability (Variable 1), and the evaluation of the disciplinary conduct (variable 12) gained medium-low validities. The instrumental hard-data Discipline measure gained medium validity. The evaluative and the actual measures of promotion both gained medium-high predictions.

Discussion

SCPE and SPPE Rating Quality

Except for the records of past achievement in MOS training, the actual disciplinary conduct of the soldier, and his rank at the end of his mandatory service, ratings were the only measurement of performance in this study. Hence, the quality of the performance ratings produced is of great concern. As indicated in the introduction, IDF's functional setting and the characteristics of its commanders suggest that ratings in this study represent a true score. Nonetheless, Appendix 3 replicated common biases in rating people: (1) lenient positively skewed distribution, (2) the high intercorrelations between questionnaire items which are characteristic of a potential halo effect. As a result of the difficulty in identifying whether such parameters define an error, or represent the true score, it is essential to identify parameters and additional evidence which will allow for such a conclusion.

A number of parameters might represent evidence regarding ratings quality. In regard to the present study these might include the following: (1) do the intercorrelations among items show variability (even within the general high-level intercorrelations)? (2) if variability does exist, is it meaningful? (3) do the evaluation measures achieve meaningful and differential correlations with other measurements, such as hard data measurements or other independent ratings?

This study results and findings provide relevant data on each of the questions presented above. While intercorrelations among questionnaire items in each of the samples studied are relatively high, they still show variability: some variables show very high correlations, some show medium correlations and a few show low correlations (see Tables A and C in Appendix 9 and Table E in Appendix 13). In addition, results clearly show that it is possible to identify meaningful consistencies within the high scale correlation values obtained. With regard to the third parameter mentioned above, Tables A, C, and E show considerable differences in the correlations achieved by the questionnaire items employed in each group, when they were correlated with the hard data measures. Even more so, Table 7 shows that the SPPE achieved considerable and significant correlations with the independent SCPE ratings (same soldiers different commanders).

Findings regarding the predictive validity of the selection scores and selection composites employed suggest a substantial confirmation of the quality of the ratings obtained in this study. As shown in Tables 8 and 12 the selection measures achieved significant validities in predicting ratings of soldier performance. Comparing the validities achieved in predicting the ratings criteria to that achieved

in predicting the hard data criteria suggest a way to evaluate ratings prediction efficiency. Data shows in this regard that the validities achieved in predicting the ratings are similar to the validities achieved in predicting the hard data measures.

Thus, it seems that the results support the assumption that ratings in this study represent a true score, in spite of potential biases.

Another perspective on rating quality refers to their reliability. Appendix 6 shows that, overall, both SPPE and SCPE proved to have appropriate scale reliability when used to evaluate combat and non-combat soldier performance. So did most of the factor and facet scores. In view of the limited number of questions comprising some of the sub-scores, attention should be given to stability considerations. Such considerations might lead to a development of more items when practically applying these sub-scales.

Soldier Performance In Combat - A Construct Structure, Characteristics and Requirements

a. Structural Aspects -

Two methods of analysis were employed in search for a structural representation of soldiers' performance in combat: SSA and Factor Analysis. The findings presented suggest that the two methods lead to somewhat different interpretations of the data.

The Factor Analysis resulted in two factors clearly differentiating between aspects which are directly related to functioning in combat (SCPE items: 1, 2, 5, 8, 3, 9, 4, 11, 10) and these representing additional indirect consequences of that performance (SCPE items: 17, 16, 15, 14, 7). SSA results, on the other hand, suggest a some what more refined interpretation.

SSA results suggest that a two facet Radex hypotheses provides an efficient interpretation of soldier performance in combat. Accordingly, two facets are proposed: (1) a polarizing facet A - a facet polarizing two elements, where one Summative element is located in the center, and another Specific element is located in the periphery; (2) a segmenting facet B - dividing the spatial representation (within the polarized two elements) into four sections representing four different aspects of performance. These aspects are: technical-and-tactical abilities, determination-and-control type activities, professionalism-promotion-and-future-and-past-perspectives-of-soldier performance, and compliance with military regulations.

The following mapping sentence provides a conceptual representation of the Radex hypothesis obtained.

```
        FACET A                                  FACET B


   {a1. SUMMATIVE   }                  {b1. DETERMINATION-AND-CONTROL                               }

   {                } ASPECTS OF THE   {b2. TECHNICAL-AND-TACTICAL                                  }

   {a2. SPECIFIC    }                  {b3. PERFORMANCE-PROFESSIONALISM-AND-PROMOTION PERSPECTIVES }

                                       {b4. COMPLIANCE TO MILITARY DISCIPLINARY REGULATIONS         }


                                                 VERY HIGH

PERFORMANCE OF SOLDIER (A) DURING COMBAT  TO BE>    |
                                                 VERY LOW
```
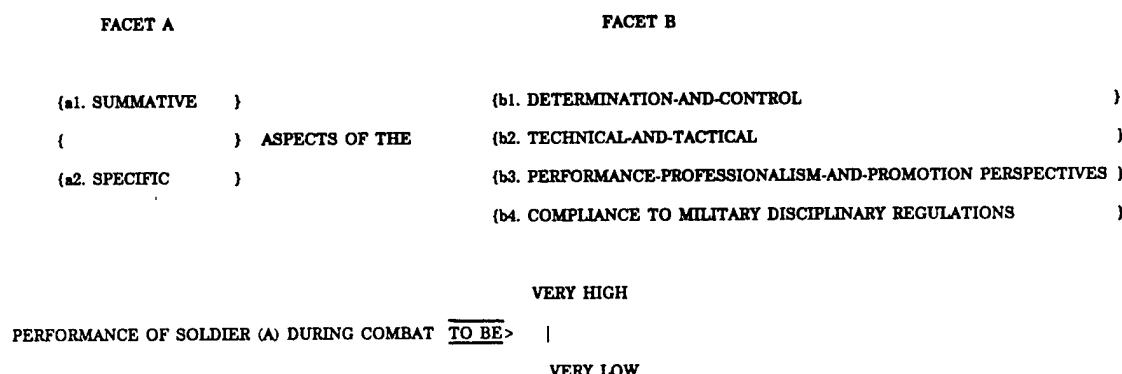
Actually, such a mapping sentence represents a theory regarding the performance of soldiers in combat. The SSA findings suggest that the performance of combat soldiers in battle will be represented best by variables which represent the combinations of facet (A) Summative and Specific elements and of facet (B) Determination-and-control, Technical-and-tactical, Performance-professionalism-and-promotion, and compliance-to-military-disciplinary-regulations elements. In addition, the Radex hypothesis suggests a meaningful interpretation of the relationships between the variables and the combinations they represent.

b. Implications regarding specific combat related functional aspects -

The detailed results described in the findings above lead to a number of broader conclusions regarding the actual performance of soldiers in combat. One inference refers to the validity of the findings. Correlations between SCPE variables and the hard data recorded (rank at end of service, actual disciplinary conduct and score in MOS training) provide the findings with important predictive as well as construct validity. Table C in Appendix 9 shows that every hard data measure is related to its respective questionnaire item more than to any other item in the questionnaire. Accordingly, Factor 2 (Routine functioning and promotion), which comprises these items, gains the highest correlations with the hard data measures.

It is interesting that except for the relationship with their respective items, the hard data measures show lower relative correlations with both Summative and Functional/ Technical-and-tactical and Determination-and-control variables, than with the Performance-professionalism-and-promotion-perspectives or with the Disciplinary variables.

While investigating the relative correlation values achieved, an additional insight may be proposed. As mentioned in the findings above, the Summative variables show the highest intercorrelations. They also correlate highest with other variables. In addition to the practical value which this finding may have, it supports the use of summative-general aspects to evaluate job performance in general.

The relative correlation values obtained represent another general insight of the results. A consistent hierarchy has been replicated with regard to all SSA elements. Table c in Appendix 9 shows a consistent hierarchy among facet elements combinations, where the Summative variables achieve the highest correlations with the other variables, the Functional/ Determination-and-control variables come next, and then come the Functional/ Technical-and-tactical variables. Lower correlations still are obtained by the Functional/ Performance-professionalism-and-promotion variables, and the lowest correlations are those of the Functional/ Disciplinary variable.

The highest correlations achieved by the Summative variables, and the consistent order of correlations level followed by the other combinations, imply that the variables achieving higher correlations are those referring most directly to aspects relevant to performance during combat, while the aspects which are not exclusively related to performance in combat achieve lower correlations.

The relative correlations achieved by the two promotion perspectives are of great interest as well. Results clearly show that prospects for soldiers promotion to NCO, as determined in view of their performance during combat, correlate more highly with all the other variables than do prospects for soldiers promotion to officer. It is suggested that differences in the essence of officer and NCO jobs explain these differential predictions. In looking at NCO training and the functional requirements for NCO, we find that there is greater similarity between these and the functional dimensions characteristic of combat soldiers, than there is between officer functional requirements and these functional dimensions. Thus, prospects for NCO promotion proved to be more akin to other dimensions of combat functioning than did the prospects for promotion to officer.

The Relationship Between Ratings Of Combat Soldier Performance In Peacetime and In Combat

a. **Who is the combat soldier who proves to be a good soldier during routine service?**

(1) Structural aspects -

SSA and Factor Analysis were used in this group as well, in order to reveal the structural representation of combat soldier performance. For this group, however, the analyses refer to performance during routine service. The findings presented above suggest that the two methods lead to somewhat different interpretations of the data for combat soldier routine functioning, as well.

Factor Analysis for this group resulted in two factors. Unlike the relatively homogeneous Factor Analysis results found for soldiers who were involved in actual fighting, each of the factors found in this group represents a wide variety of functional aspects. While the major factor represents aspects of promotion, coping, prospects for performance in combat, and professionalism (SPPE items: 18, 5, 4, 17, 16, 3, 1, 2, 15, 14), the secondary factor represents compliance to work regimen and discipline requirements as well as other everyday functional aspects (SPPE items: 6, 11, 12, 10, 8, 9, 13, 7). While suggesting a concise result, the variety of aspects represented by each factor makes its interpretation difficult, and makes the representation of specific functional aspects difficult as well.

For this group too, SSA results suggest a more refined and heuristic interpretation. The results presented in the findings above lead to a specific circular segmenting pattern, where a segmented five-element facet B encircles a one-element facet A. While facet A was characterized as Summative-conduct, representing SPPE items 2 and 13, the five elements of facet B represent five functional aspects. These are: (1) Effort-and-integration-in-team (SPPE items 7, 8, 9, 10, 14, 15, 16), (2) Professionalism-and-promotion (SPPE items 1, 4, 5, 17, 18), (3) Work regimen (SPPE items 6, 11) (4) Disciplinary conduct (SPPE item 12), and (5) Prospects for functioning in combat (SPPE item 3).

The following mapping sentence provides a conceptual representation of the Radex hypothesis obtained.

FACET A   FACET B

                                 {b1. EFFORT-AND-INTEGRATION-IN-TEAM}
                                 {b2. PROFESSIONALISM-AND-PROMOTION}
A {a1. SUMMATIVE-CONDUCT} ASPECT OF THE {b3. WORK REGIMEN   }
                                 {b4. DISCIPLINARY CONDUCT   }
                                 {b5. PROSPECTS-FOR-FUNCTIONING-IN-COMBAT}

                              VERY HIGH
PERFORMANCE OF A COMBAT SOLDIER (A) DURING ROUTINE SERVICE TO BE> |
                              VERY LOW
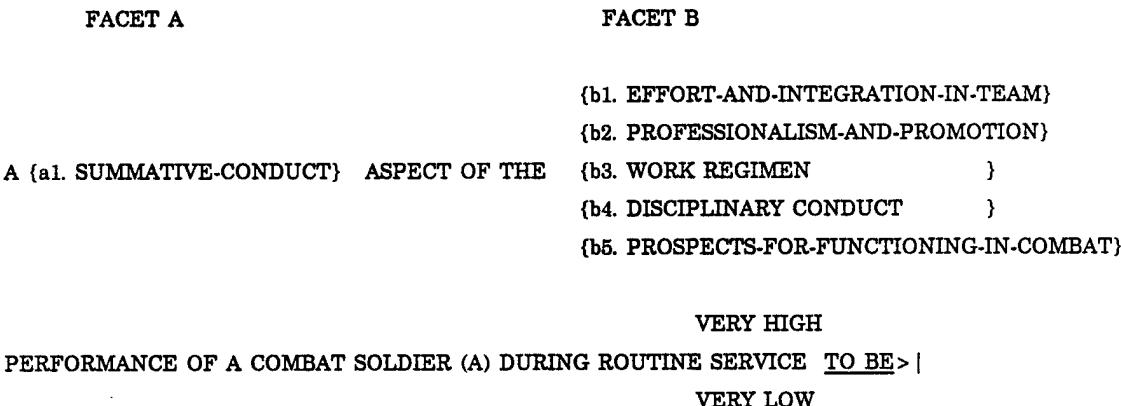
Actually, such a mapping sentence represents a theory of soldier performance in combat. The SSA findings suggest that the performance of combat soldiers during their routine service will be represented best by variables which represent the element representing the Summative-conduct facet A, and each of the five facet B Functional elements: Effort-and-integration-in-team, Professionalism-and-promotion, Work regimen, Disciplinary conduct, and Prospects-for-functioning-in-combat.

(2) <u>Implications regarding specific aspects of soldier performance during routine service</u> -

The detailed SPPE and hard data results presented in the findings above suggest a number of insights regarding the performance of soldiers during routine service. Similar to SCPE findings, the correlations between SPPE variables and the hard data recorded (rank at end of service, actual disciplinary conduct, and score in MOS training) provide important predictive as well as construct validity to the findings. Table A in Appendix 9 shows that every hard data measure is related to its equivalent questionnaire item more than to any other item in the questionnaire.

Another perspective relates to the relative correlation values obtained. Analysis of the relative correlation levels presented in Table A in Appendix 9 provide additional support to the facet element identification and definition. The results show that intercorrelations between the variables representing each element achieve higher values than the correlation values which these variables achieve with variables classified to other elements. This suggests that the variables assigned to each element represent a similar domain.

One of the major perspectives of this study was the relationship between combat and peacetime performance. The correlations between the hard data measures-- rank at end of service, actual disciplinary conduct and score in MOS training-- and the SPPE variables suggest interesting evidence in this regard. In

addition to the evaluation of soldier performance during routine service, the SPPE asked raters whether their soldiers might be relied upon in combat (Variable 3). It should be noted that combat IDF NCOs and officer frequently have experience in combat operations, so such a question is not theoretical for them.

In comparison to their correlations with the other SPPE variables, all three measures achieved their lowest correlation coefficients with the prospects for soldier performance in combat (actually, these were the lowest correlations these variables achieved). This pattern provides further evidence for the recognition that performance requirements for soldiers during routine service are indeed different from those they would confront in combat.

Consistent with SCPE findings regarding soldier combat performance, the Summative variables and the prospects for promotion to NCO show the highest correlations with peacetime prospects for combat performance. Together, these findings lend additional support to the use of summative ratings in evaluating soldier performance. The NCO job and the prospects for promotion to NCO prove again to reflect a type of performance more related to the type of performance required in combat than do officer job.

The promotion perspective suggests a further interesting insight. Prospects for promotion to NCO proved to be most related to prospects for combat performance. Officer promotion prospects, however, achieves the highest correlations both in predicting actual promotion in rank as well as other routine aspects of performance. The differential results obtained for NCO and for officer promotion suggest that indeed these two perspectives represent two distinct (but related) aspects of performance.

Work regimen and discipline are basic to military routine and to unit management in peacetime. The results suggest an interesting interpretation of these two perspectives. Both achieved considerably lower correlations with other SPPE variables, as well as with the hard data measures. One implication of the findings is that these two aspects represent performance perspectives which are essentially different from the other perspectives identified. But the findings may have broader implications as well. These results seem to reflect a basic approach commanders have according to which soldiers are regarded following their positive efforts rather than their mis-conducts: a good soldier is he who puts effort rather than the one who avoids troubles.

b. __What kind of soldier makes the best fighter? - The relationship__ __between specific aspects of peacetime performance and performance in__ __combat.__

The relationship between soldier performance during routine service and performance in combat is a major focus of this study. Table 7 and Appendix 11 address this issue through statistical relationship measures. While Table 7 presents the correlations between both SPPE ratings and hard data measurements of peacetime performance and performance in combat, Appendix 11 shows the results of the regressions of routine performance measures on a variety of aspects relevant to performance during combat.

Both data sets show, overall, that aspects of soldier peacetime performance are significantly related to soldier combat performance. This relationship is portrayed by medium scale correlation values. While the aggregate factor and SSA element scores did not achieve higher correlations than did the individual variables, the regressions on the different combat performance aspects led to higher multiple correlations. The correlations achieved by Variable 3, "May be relied upon in combat", are of particular interest. Although showing medium-scale correlations with the different combat functioning aspects, the peacetime element representing prospects for functioning in combat did not correlate most highly with the different combat performance aspects.

As described in greater detail in the findings above, the variables which achieved the highest correlations with the combat performance measures overall, or those contributing most to their multiple correlations, were: (1) the Summative-conduct element variable 13 ("Good soldier"), (2) the Functional/ Effort-and-integration-in-team element variables 7 ("Useful"), 8 ("Team work and cooperation"), 9 ("Fully accomplishes his tasks"), 15 ("Positive initiative") and 16 ("Copes himself"), (3) prospects for promotion to NCO (Variables 4 and 17), (4) and the Work regimen variable 6 ("Shirks from work and duties").

Analysis of those variables which achieved relatively low correlations with combat performance aspects and those which achieved higher correlations suggests a characterization of the peacetime aspects which make a soldier a good fighter. The Summative item and the two Functional/ Effort-and-integration-in-team element items that achieved lower correlations with combat performance aspects are, respectively, "Adjust to military" (Variable 2) and "Has interest in work" (variable 10) and "Social adjustment" (Variable 14).

While the variables achieving the relatively lower correlations clearly represent intrinsic and adjustment aspects, the variables achieving the higher correlations with combat performance portray output, functional and practical representations

of soldier performance. This finding implies a clear emphasis on functional aspects, such as these identified above, while evaluating soldiers vis-a-vis their prospects for effective functioning in combat. Even more, it has direct implications for unit command and unit management, and on the attitudes which commanders should aim to impart to their soldiers.

A word of caution should be said in this regard. The closer relationship found between functional aspects of soldier performance in routine service and their effective performance in combat does not exclude or invalidate the intrinsic, motivational and social elements. These elements represent factors, values, norms, and policies that commanders should still try to inculcate in their soldiers. Apparently, they play a role as indirect but necessary conditions, rather than the direct and sufficient-condition role which the functional aspects proved to play.

Of particular interest are the combat aspects with which SPPE items consistently showed relative low correlations. These were the SCPE discipline perspective represented by Variable 7 ("Followed disciplinary regulations"), and two of the Functional/ Determination-and-control element items: 1 ("Calm and collected") and 5 ("Operational functioning not impaired"). The low correlations obtained by these variables may be explained by their being unrelated to soldier peacetime functioning aspects. Difficulties in defining a standard frame of reference as a basis for rating these aspects may, however, suggest another reason for the low correlations obtained. It seems, indeed, difficult to define the phenomenology of impaired or unimpaired combat performance and the limits of each of these behaviors.

The results suggest additional insights with regard to specific aspects of soldiers peacetime performance. These aspects are: Professionalism, promotion, work regimen, and discipline. Professionalism is regarded as an important aspect of soldier effectiveness. The results suggest two encouraging findings in this regard: (1) the correlation between peacetime and combat ratings of the technical-and-tactical abilities of the soldier, and (2) the correlation between score in MOS course and ratings of combat technical-and-tactical abilities.

Showing, virtually, the highest correlation which these ratings achieved, the intercorrelation between ratings of technical-and-tactical abilities in peacetime and in combat suggest construct as well as predictive validity for measurements of this aspect. Although not showing the highest correlations with the ratings of other aspects of combat performance, the significant correlations which peacetime soldier technical-and-tactical ability ratings show with ratings of all the other aspects of combat performance are indicative of its being a valid aspect.

For the MOS course score, on the other hand, the correlation with rating of combat technical-and-tactical ability was the only significant correlation it achieved. This finding seems to imply that MOS training is focused exclusively and efficiently on professional aspects. As this study shows, combat performance is represented by a variety of functional aspects. Hence, a question may be raised as to whether while providing soldiers with their basic training, MOS training should strive to represent other aspects of combat performance as well.

The promotion perspective suggests a further interesting insight. Consistent with SCPE and SPPE findings, the prospects for promotion to NCO show higher correlations with the different aspects representing performance in combat. The greater similarity between combat functioning dimensions of soldiers and NCOs than between those of soldiers and officers may explain this consistent finding.

Another essential findings regarding promotion is the consistent relationship between promotion and professionalism. Both the correlations between these two perspectives and the structural construct-related results (SSA and Factor Analysis findings) show this relationship. It seems as if the know-how of the military job is almost a condition for being promoted in the IDF. As such these findings are complementary to Kalay's (1982) findings. That study showed that the professional skills of the commander are one of the three factors building soldier confidence in their commanders, this study suggest evidence regarding the "vicious circle" which maintains this reality: high professional skills is related to promotion.

The findings suggest some interesting insights regarding the Work regimen and the Disciplinary elements as well. Between the two work regimen items, Variable 6 ("Shirks from work and duties") shows higher correlations with the different combat performance aspects than does Variable 11 ("Late for work and musters"). This finding further seems to represent and support the close correlations which the functional aspects of routine performance have with aspects of combat performance. Again, it is the effort soldiers are putting into their job, rather than compliance to procedural regulations, that prove to be more related to combat performance.

The results of the peacetime disciplinary conduct measurements, Variable 12 and the recorded number of actual disciplinary violations, further support the direction portrayed above. None of the ratings of combat performance obtained significant correlations with the hard data measurement of disciplinary conduct. Although ratings of peacetime disciplinary conduct were significantly related to combat performance, they achieved the lowest relative correlations in comparison to other SPPE variables.

Toward a Comprehensive Validated Theory of Combat Soldier Evaluation in Both Routine and Combat Situations.

A comparison of SSA SCPE and SPPE findings (in routine and after combat) suggests two aspects which may lead to a more comprehensive theory regarding combat soldier performance both in routine service and in combat. The first aspect refers to the similarity of the Functional facet elements explored in each of the situations, and the second suggests that a Radex (rather than the Circumplex) hypothesis may explain routine performance of combat soldiers as well as it explains their performance in combat. Data regarding correlation coefficients levels of SCPE and SPPE items suggest grounds for deciding what items will comprise the combined elements that will be suggested.

a. A unified representation of Functional facet elements used for evaluating combat soldiers during routine service and in combat -

A Comparison between the elements comprising the Functional facets defined within the Radex hypothesis, for the soldiers involved in combat, and the Circumplex hypothesis, for combat soldiers' routine performance reveals considerable similarity. The routine Circumplex Functional-specific elements Disciplinary conduct (b4) and Professionalism-and-promotion (b2) are virtually identical to the combat Radex Functional elements (b4) Adherence-to-military-regulations and (b3) Professionalism-promotion-and perspectives-of-past-performance.

The essence of the routine Functional element Effort-and-integration-in-team (b1) and its item content suggest that it is roughly equivalent to the combat Radex Functional element Technical-and-tactical abilities. Comparing the essence and item content of the routine Work regimen Functional element (b3) and the combat Determination-and-control Functional element (b2) suggests that they, as well, represent similar domains. Apparently, the routine Prospects-for-functioning-in-combat Functional element (b5) has no equivalent combat Functional element.

Thus, it seems that elements representing identical content domains might be used when evaluating both routine and combat functional aspects of the performance of combat soldiers. The elements representing these content domains are: (1) Technical-and-tactical and effort, (2) Determination, regimen, and control, (3) Professionalism and promotion, (4) Disciplinary conduct. An additional element addressing prospects-for-functioning-in-combat should be added when referring to combat soldiers during routine service.

b. Designing an evaluation procedure for the Functional elements on the basis of item validity data -

SCPE item correlations with SPPE items suggest a basis for choosing the more valid items for representing the different Functional elements. Ratings based on these items will more efficient in identifying the soldiers likely to prove most effective in combat based on the correlations achieved. The data presented in Table 7 and in Appendix 11, and the discussion above, lead to assign the following items to measure each of the Functional elements identified:

(1) the Technical-and-tactical and effort element - variables 7 ("Useful"), 8 ("Team work and cooperation"), 9 ("Fully accomplishes his tasks"), 15 ("Positive initiative"), 16 ("Copes himself");

(2) the Determination, regimen, and control element - variable 6 ("Shirks from work and musters");

(3) the Professionalism and promotion element - variables 4 ("Recommend to NCO") and 1 ("Technical-and-tactical abilities");

(4) the Disciplinary conduct element - variable 12 ("Military discipline")

(5) the prospects for functioning in combat element - variable 3 ("may be relied upon in combat").

c. Prospects for a common Radex hypothesis representing combat soldiers' routine and combat functioning -

Both the Radex and the Circumplex hypotheses contain a Functional facet. As shown above, the elements of these two facets are equivalent. Both hypotheses identified a Summative facet as well. Since SPPE was not originally developed along SSA conceptualization, a limited number of items represent the SPPE Summative facet. Thus, it is difficult to conclude whether a questionnaire that would have included Summative equivalents to Functional elements would have resulted in a Radex configuration with items representing the Functional elements combinations. The similar spatial configurations of questionnaire results in both groups, however, suggest a strong support for such a possibility: in both questionnaires a segmented Functional facet is peripheral to a concentric Summative facet. Even more, SSA methodology allows, at least theoretically, for a Radex hypothesis where one of the facets (the polarizing or the segmenting) is represented by one element only.

Although only further research may prove whether a Radex rather than a circumplex hypothesis may provide a more comprehensive interpretation of combat soldier performance during routine as well, the considerations discussed above allow for such a possibility.

Characteristics of Non-Combat Soldier Performance.

Although showing some differences, Factor Analysis and SSA suggest a similar picture of the non-combat soldier. The general aspects characteristic of combat soldiers during routine service-- effort and integration in team, promotion and professionalism, work regimen, discipline, and prospects for performance in combat-- seem to be replicated for non-combat soldiers as well.

The relationships among the variables result, however, in a much more distinct structural pattern.

Analysis of the correlation and regression results suggest that findings regarding non-combat soldiers reconstruct, essentially, the basic directions identified for the combat groups in this study. This general conclusion is well illustrated by the structural SSA representation of the close relationship between soldier prospects for promotion to NCO and for functioning in combat. Similarly, also for non-combat soldiers the summative-type ratings are representing other soldier performance aspects best, the professional ability is related to items representing prospects for promotion, and the differential relationships of the work regimen items are replicated.

In view of the findings regarding combat soldiers, it seems that the command and management of non-combat soldiers follows a similar pattern suggesting a common basis of conceptions, values and norms that are shared by IDF commanders.

Selection Scores as Predictors of Soldier Combat and Routine Performance.

Selection systems applied in the military face two questions vital to the evaluation of their efficiency and even to their credibility. Both have not been answered. These are: (1) taking their efficiency in predicting criteria representing routine performance objectives as a given, are they also efficient in predicting how well will those soldiers perform in combat? (2) is any of the skills frequently represented in military selection composites more important than others (e.g. will smarter soldiers function better in the battlefield?).

The design followed in this research sheds light on these two questions. The results show that selection scores studied achieved significant correlations when aimed to predict both hard data measurements and ratings of combat as well as non-combat soldier performance. The fact that the validities show medium to low correlation values may draw an objection to this conclusion. Still, the findings show that any practical application of the results will lead to more efficient combat-related selection and classification decisions than that which will be achieved without these selection procedures.

The validities shown by the selection measures in predicting both actual promotion and ratings of the prospects for soldier promotion should be especially noted. It seems that the scores and composites studied are exceptionally efficient in predicting promotion of any kind.

The findings show that while they achieve higher validities in predicting combat soldier peacetime performance, selection scores and composites achieve significant validities predicting soldier performance in combat as well.

Specifically, the findings provide the military with evidence regarding the relationship between quality and combat performance. They show that cognitive ability is more closely related to effective combat performance than it has been considered to be until now, and that a better prediction of combat performance will be achieved by increasing the weight of the score measuring cognitive ability (the CAS) in the Primary Selection Composite (PSC).

While cognitive skills play a greater role in predicting combat soldier performance, adjustment to the military is more related to non-combat soldier performance. Consequently, the validity of the Primary Selection Composite (PSC) in predicting non-combat soldier performance can be improved by increasing the weight of the score representing Potential for adjustment (PA) in the composite.

Summary

This study aimed to explore the following three subjects: (1) the relationship between combat soldier performance during routine service and their performance in combat, (2) the differential efficiency selection composites and scores show in predicting combat soldier performance in routine and in combat, and (3) the construct structure portraying combat soldier performance. The validity of selection composites and the construct structure characterizing performance were studied with regard to soldiers in non-combat jobs as well.

Four groups of Israeli Defence Force (IDF) combat soldiers were subjects in the study: (1) Ground Forces combat soldiers in the course of their routine service, (2) Ground Forces combat soldiers after fighting a battle, (3) soldiers who were in group 1 and in group 2, and (4) soldiers who were serving in non-combat jobs. All the soldiers were draftees and were at least 6 month in the military before ratings of their performance were obtained.

Soldier performance was evaluated by ratings pursued by the soldier's direct commander. Hard data measures of soldier routine performance and soldier's selection composites were recorded as well. Ratings referred to a variety of aspects representing soldier performance during peacetime and in routine measured independently by two questionnaires. The hard data measures were records of disciplinary conduct, training achievements, rank at end of service, and selection scores.

Results show that ratings of soldier peacetime and combat performance show significant medium scale correlations (r= .40-.50). Peacetime summative and specific aspects of technical-and-tactical, professionalism and promotion, and of prospects for performance in combat showed higher relative correlations, and work regimen and discipline aspects showed lower relative correlations with combat performance.

Findings regarding the questionnaires used suggest that the ratings represent a meaningful construct structure and that they are efficient in predicting soldier combat performance. Factor analysis and Smallest Space Analysis (SSA) were applied in search of such a meaningful construct structure and characterization of combat and non-combat soldier performance. Two factors represented combat soldier performance in battle. Those were: (1) "combat functioning", which included items directly related to the functioning in combat, and (2) "routine functioning and promotion", which included items implying a wider functional perspective. Two different factors represented combat soldier performance during routine service: (1) "promotion professionalism and prospects for functioning in combat", and (2) "work regimen

and functional performance". Factor analysis characterized non-combat soldier performance by the three following factors: (1) "effort and integration in unit", "promotion and professionalism", and "work regimen".

SSA results suggest that a Radex two-facet hypothesis represents combat soldier performance, that a circumplex two-facet hypothesis represents peacetime combat soldier performance, and that a circumplex one-facet hypothesis represents non-combat soldier performance. The two facets identified were: (1) a summative-general facet, and (2) a functional-specific facet. The elements comprise the specific-functional facet might be generalized and thus represent the following five aspects: effort, professionalism and promotion, work regimen, disciplinary conduct and prospects for combat functioning. A technical-and-tactical element and a functional-performance-and-promotion element comprise the summative facet.

Based on the common elements identified a unified radex hypothesis explaining combat soldier performance both in peacetime and in combat.

The predictive and construct validity they show make the questionnaires employed in this study both efficient predictors and useful evaluation procedures of soldier performance in combat.

These results have direct implications to unit command and unit management during routine service and to attitudes which commanders would strive to impart in their soldiers.

The selection measures studied proved to achieve significant correlations with soldier routine performance. Although validities toward combat performance were significant as well, selection scores achieved lower correlations in predicting soldier combat performance. Differential predictions were achieved by the sub-scores comprising the composite. While the cognitive abilities correlated higher with combat soldier performance, scores representing potential for adjustment to the military achieved higher predictions of non-combat soldier performance.

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Appendix 1

SOLDIER'S COMBAT PERFORMANCE EVALUATION

The following items refer to the performance of soldiers and NCOs during *actual fighting*. Read each item, select the letter in the scale at the right of the item that best applies to the soldier or NCO you are evaluating, and then mark your choice on the answer sheet provided.

Your answers will help us to better understand the factors involved in going through combat. THANK YOU FOR YOUR COOPERATION.

Functioning in Combat

	Very high	High	Moderate	Low	Very low
1. Remained calm and collected during the fight.	A	B	C	D	E.
2. Showed courage and readiness to cope with danger during the fight.	A	B	C	D	E
3. Cooperated and got along with other squad members.	A	B	C	D	E
4. Fully accomplished his part of the mission during the fight.	A	B	C	D	E
5. His operational functioning was not impaired during the fight.	A	B	C	D	E
6. "Stuck to the goal" in carrying out his job.	A	B	C	D	E
7. Followed disciplinary regulations.	A	B	C	D	E
8. How well did he adjust to difficult conditions?	A	B	C	D	E
9. To what degree may he be relied upon in combat?	A	B	C	D	E
10. Would you choose him for future combat missions?	A	B	C	D	E
11. Overall, how well did he function during the fighting?	A	B	C	D	E

The Following Questions Refer to Soldiers Who Had Command Duties

12. To what degree did he show personal example to his soldiers during the operation?	A	B	C	D	E
13. How would you evaluate the command and control skills he demonstrated during the operation?	A	B	C	D	E

General Questions

14. How do you evaluate the technical and tactical abilities of this soldier?	A	B	C	D	E
15. Would you recommend him as a squad leader? (Skip if already a squad leader.)	A	B	C	D	E
16. Does he have the potential to go beyond squad leader level?	A	B	C	D	E
17. In general, how well did he perform prior to combat	A	B	C	D	E

Name of soldier being rated: _____

SSAN: _____ Rank: _____

MOS: _____

His duty assignment in combat: _____

Rater's full name: _____

Appendix 2

SOLDIER'S PEACETIME PERFORMANCE EVALUATION

The following items refer to the performance of soldiers during *routine military service*. Read each item, select the option that best applies to the soldier you are evaluating, and then mark your choice on the answer sheet provided.

Your answers will help us to improve soldier placement and allocation decisions.

THANK YOU FOR YOUR COOPERATION.

	Very high	High	Moderate	Low	Very low
1. How do you evaluate the technical and tactical abilities of this soldier?	A	B	C	D	E
2. How do you evaluate the adjustment of this soldier to the military?	A	B	C	D	E
3. To what degree may he be relied upon in combat?	A	B	C	D	E
4. Would you recommend him as a squad leader? (Skip if already a squad leader.)	A	B	C	D	E
5. Does he have the potential to go beyond squad leader level?	A	B	C	D	E
6. Often shirks from work and duties.	A	B	C	D	E
7. He is very useful and contributing.	A	B	C	D	E
8. Works in cooperation with other team members and gets along with them.	A	B	C	D	E
9. Fully accomplishes his tasks.	A	B	C	D	E
10. Has interest in his job.	A	B	C	D	E
11. Late for work and musters.	A	B	C	D	E
12. Follows disciplinary regulations.	A	B	C	D	E
13. He is a good soldier.	A	B	C	D	E
14. He adjusts socially.	A	B	C	D	E
15. Shows positive initiative.	A	B	C	D	E
16. Able to cope with problems before turning to his superiors.	A	B	C	D	E

17. What chance does the soldier have to obtain NCO training and to complete the course successfully (%).

90% or more	80%	70%	60%	50%	40%	30%	20%	10% or less

18. What chance does the soldier have to obtain officer training and to complete the course successfully (%).

90% or more	80%	70%	60%	50%	40%	30%	20%	10% or less

Name of soldier being rated:_____

SSAN:_____Rank:_____

MOS:_____

His duty assignment:_____

Rater's full name: _____

Appendix 3

Averages and standard deviations of SPPE items in combat soldiers research groups-- combat soldiers during routine service, combat soldiers after participating in a combat, and soldiers intersecting the first two groups-- and in non-combat soldiers.

a. Combat soldiers in the course of their routine military service (n=1279).

Item	Mean	SD
A 1	3.60	.94
A 2	3.70	.93
A 3	3.89	1.13
A 4	3.76	1.25
A 5	3.10	1.31
A 6	3.99	1.07
A 7	3.73	.93
A 8	3.85	.92
A 9	3.73	.93
A10	3.60	.99
A11	3.93	1.06
A12	3.91	.93
A13	3.91	.97
A14	3.82	.98
A15	3.53	1.03
A16	3.40	1.02
A17	6.87	2.25
A18	5.63	2.59
ALL	3.71	.78
Facet measures:		
a1[1]	3.81	.88
b1[2]	3.67	.82
b2[3]	4.59	1.49
b3[4]	3.96	.93
ACP[5]	4.84	1.70
Factor measures:		
1[6]	4.38	1.20
2[7]	3.83	.76

[1] a1 - Summative-conduct Variables (2, 13).
[2] b1 - Functional/ Effort facet element items (7, 8, 9, 10, 14, 15, 16).
[3] b2 - Functional/ Professionalism and promotion variables (1, 4, 5, 17, 18).
[4] b3 - Functional/ Work Regimen element items (6, 11).
[5] Items representing prospects for promotion (4, 5, 17, 18).
[6] Factor 1, Promotion, professionalism and combat, Variables(18, 5, 4, 17, 16, 3, 1, 2, 15, 14).
[7] Factor 2, Work regimen and functional performance, Variables (6, 11, 12, 10, 8, 9, 13, 7).

b. <u>Non-combat group (N=2407)</u>.

Item	Mean	SD
A 1	3.33	.91
A 2	3.54	.93
A 3	4.09	1.43
A 4	3.66	1.56
A 5	2.85	1.26
A 6	3.97	1.14
A 7	3.63	.94
A 8	3.74	.98
A 9	3.60	.98
A10	3.51	1.06
A11	3.82	1.19
A12	3.87	.98
A13	3.88	.97
A14	3.77	.97
A15	3.45	1.05
A16	3.08	1.07
A17	5.78	2.55
A18	5.13	2.63
ALL	3.61	.77
Facets:		
A[1]	.84	
B[2]	3.95	1.37
C[3]	3.89	1.37
D[4]	3.89	1.03
ACP[5]	4.36	1.77
Factors:		
1[6]	3.61	0.80
2[7]	4.14	1.41
3[4]	3.89	1.03

[1] A - Effort facet items (7, 8, 9, 10, 13, 14, 15).
[2] B - Promotion, professionalism and adjustment items (2, 16, 17, 18, 5, 1).
[3] C - NCO and combat prospects items (4, 3).
[4] D - Work regimen items (6, 11).
[5] Promotion Prospects items (4, 5, 17, 18).
[6] Factor 1, Effort and integration in unit, items (8, 13, 9, 7, 10, 15, 14, 12, 2, 16).
[7] Factor 2, Promotion and professionalism, items (18, 5, 17, 4, 1, 3).
[7] Factor 3, Work regimen, items (6, 11).

c. <u>Intersecting group</u> (N=95)

Item	Mean	SD
A 1	3.56	.95
A 2	3.70	1.01
A 3	3.78	1.07
A 4	3.81	1.05
A 5	3.03	1.37
A 6	3.82	1.12
A 7	3.63	.92
A 8	3.79	.93
A 9	3.69	1.01
A10	3.61	.97
A11	3.84	1.01
A12	3.97	.89
A13	3.77	1.05
A14	3.80	.99
A15	3.54	1.09
A16	3.36	1.15
A17	7.13	2.55
A18	5.61	2.94
ALL	3.89	.96

Facet measures:

	Mean	SD
a1[1]	3.74	.97
b1[2]	3.63	.86
b2[3]	4.63	1.59
b3[4]	3.83	.97
ACP[5]	4.89	1.80

Factor measures:

	Mean	SD
1[6]	4.13	1.19
2[7]	3.76	.80

[1] a1 - Summative-conduct Variables (2, 13).
[2] b1 - Functional/ Effort facet element items (7, 8, 9, 10, 14, 15, 16).
[3] b2 - Functional/ Professionalism and promotion variables (1, 4, 5, 17, 18).
[4] b3 - Functional/ Work Regimen element items (6, 11).
[5] Items representing prospects for promotion (4, 5, 17, 18).
[6] Factor 1, Promotion, professionalism and combat, Variables(18, 5, 4, 17, 16, 3, 1, 2, 15, 14).
[7] Factor 2, Work regimen and functional performance, Variables (6, 11, 12, 10, 8, 9, 13, 7).

Appendix 4

Averages and standard deviations of SCPE items in combat and in intersecting (SPPE + SCPE) groups.

a. Combat soldiers evaluated after participating in combat (N=594).

Item	Mean	SD
S 1	3.72	.97
S 2	3.65	.97
S 3	3.87	.99
S 4	3.80	.99
S 5	3.86	1.07
S 6	3.80	.97
S 7	3.93	.99
S 8	3.92	.90
S 9	3.85	1.00
S10	3.80	1.13
S11	3.80	.94
S14	3.74	.90
S15	3.76	1.14
S16	3.06	1.28
S17	3.66	.96
ALL	3.75	.82
Facets:		
a1b1[1]	7.66	1.86
a2b1[2]	3.75	.90
a2b2[3]	3.85	.86
a2b3[4]	3.51	.95
Factors:		
1[5]	3.68	.82
2[6]	3.59	.87

[1] Summative/ Technical and Tactical facet element items (9, 11).
[2] Functional/ Determination and Control facet element items (1, 2, 5).
[3] Functional/ Technical and Tactical facet element items (3, 4, 6, 8).
[4] Functional/ Performance, professionalism and promotion prospects (14, 15, 16, 17).
[5] Factor 1, Combat functioning, items (1, 2, 5, 6, 8, 3, 9, 4, 11, 10).
[7] Factor 2, routine functioning and promotion, items (17, 16, 15, 14, 7).

b. <u>SCPE results in Intersecting sample</u> (N=95)

Item	Mean	SD
S 1	3.61	.94
S 2	3.57	.91
S 3	3.77	.93
S 4	3.68	.94
S 5	3.40	1.10
S 6	3.62	.91
S 7	3.93	.86
S 8	3.91	.86
S 9	3.80	1.10
S10	3.67	1.14
S11	3.78	.96
S14	3.64	.89
S15	3.67	1.03
S16	3.11	1.18
S17	3.61	1.02
ALL	3.61	.79
Facets:		
a1b1[1]	7.58	1.94
a2b1[2]	3.53	.84
a2b2[3]	3.75	.81
Factors:		
1[5]	3.68	.82
2[6]	3.59	.87

[1] Summative/ Technical and Tactical facet element items (9, 11).
[2] Functional/ Determination and Control facet element items (1, 2, 5).
[3] Functional/ Technical and Tactical facet element items (3, 4, 6, 8).
[4] Functional/ Performance, professionalism and promotion prospects (14, 15, 16, 17).
[5] Factor 1, Combat functioning, items (1, 2, 5, 6, 8, 3, 9, 4, 11, 10).
[7] Factor 2, Routine functioning and promotion, items (17, 16, 15, 14, 7).

Appendix 5

Means and standard deviations of MOS training scores and of disciplinary conduct in the different samples.

a. Combat soldiers during routine service (N=1279)

Item	Mean	SD
Rank	3.98	.79
MOS training score	74.85	13.27
Disciplinary conduct	.61	1.48
Primary Selection Composite	52.36	2.32
Cognitive Ability Score	6.95	1.33
Potential for Adjustment	25.80	4.47
Schooling	11.63	.89

b. Combat soldiers participating in combat (N= 594)

Item	Mean	SD
Rank	4.05	.76
MOS training score	73.28	12.31
Disciplinary conduct	.50	1.15
Primary Selection Composite	52.70	2.29
Cognitive Ability Score	6.72	1.34
Potential for Adjustment	25.87	4.38
Schooling	11.44	1.07

c. <u>Non-combat soldiers</u> (N=2291)

Item	Mean	SD
Rank	3.77	.81
Disciplinary conduct	.96	1.94
Primary Selection Composite	50.55	3.22
Cognitive Ability Score	6.36	1.60
Potential for Adjustment	22.44	5.49
Schooling	11.18	1.54

d. <u>Intersecting sample</u> (N=95)

Item	Mean	SD
Rank	4.11	.72
MOS training score	70.28	9.01
Disciplinary conduct	.47	1.07
Primary Selection Composite	53.04	1.93
Cognitive Ability Score	6.77	12.39
Potential for Adjustment	26.61	3.95
Schooling	11.66	.85

Appendix 6

SPPE overall and sub-scores reliabilities for the combat and non-combat samples

a. SPPE reliabilities for the non-combat group

1. Overall questionnaire - a= .93
2. Factor 1 items, Effort and integration in unit, items (8, 13, 9, 7, 10, 15, 14, 12, 2, 16) a= .94
3. Factor 2, Promotion and professionalism, items (18, 5, 17, 4, 1, 3)- a= .86
4. Factor 3, Work regimen, items (6, 11) - a= .72
5. Facet A, Effort, items (7, 8, 9, 10, 13, 14, 15) - a= .93
6. Facet B, Promotion, professionalism and adjustment, items (2, 16, 17, 18, 5, 1) - a= .88
7. Facet C, NCO and combat prospects, items (3, 4) - a= .75
8. Facet D, Work regimen, items (6, 11) - a= .72
9. Promotion items only (4, 5, 17, 18) - a= .87
10. Discipline and work regimen items (6, 11, 12) - a= .67

b. SPPE reliabilities for the combat soldiers

1. Overall questionnaire - a= .94
2. Factor 1, Promotion, professionalism and combat, (18, 5, 4, 17, 16, 3, 1, 2, 15, 14) - a= .92
3. Factor 2, Work Regimen and functional performance, (6, 11, 12, 10, 8, 9, 13, 7) - a= .90
4. a1, the Summative-conduct element (2, 13) = a .82
5. b1, the Functional/ Effort facets element (7, 8, 9, 10, 14, 15, 16) - a= .93
6. b2, the Functional/ Professionalism and promotion (1, 4, 5, 17, 18) - a= .89
7. b3, the Functional Work regimen (6, 11) - a= .89
8. Promotion items only (4, 5, 17, 18) - a= .90
9. Discipline and Work regimen items (6, 11, 12) - a= .72

Appendix 7

SCPE overall and sub-scores reliabilities

1. Overall questionnaire - a= .96
2. Factor 1, Combat Functioning (1, 2, 5, 6, 8, 3, 9, 4, 11, 10) - a= .96
3. Factor 2, Routine functioning and promotion (17, 16, 15, 14, 7) - a= .88
4. a1b1, Summative/ technical-and-tactical items (9, 11) -
   a= .91
5. a2b1, Functional/ Determination and control items (1, 2, 5) - a= .87
6. a2b2, Functional/ Technical-and-tactical items (3, 4, 6, 8) - a= .91
7. a2b3, Functional/ Performance, professionalism and promotion items (14, 15, 16, 17) -
   a= .88

Appendix 8

SPPE SSA configuration of combat soldiers rated during their routine service - no missing values allowed
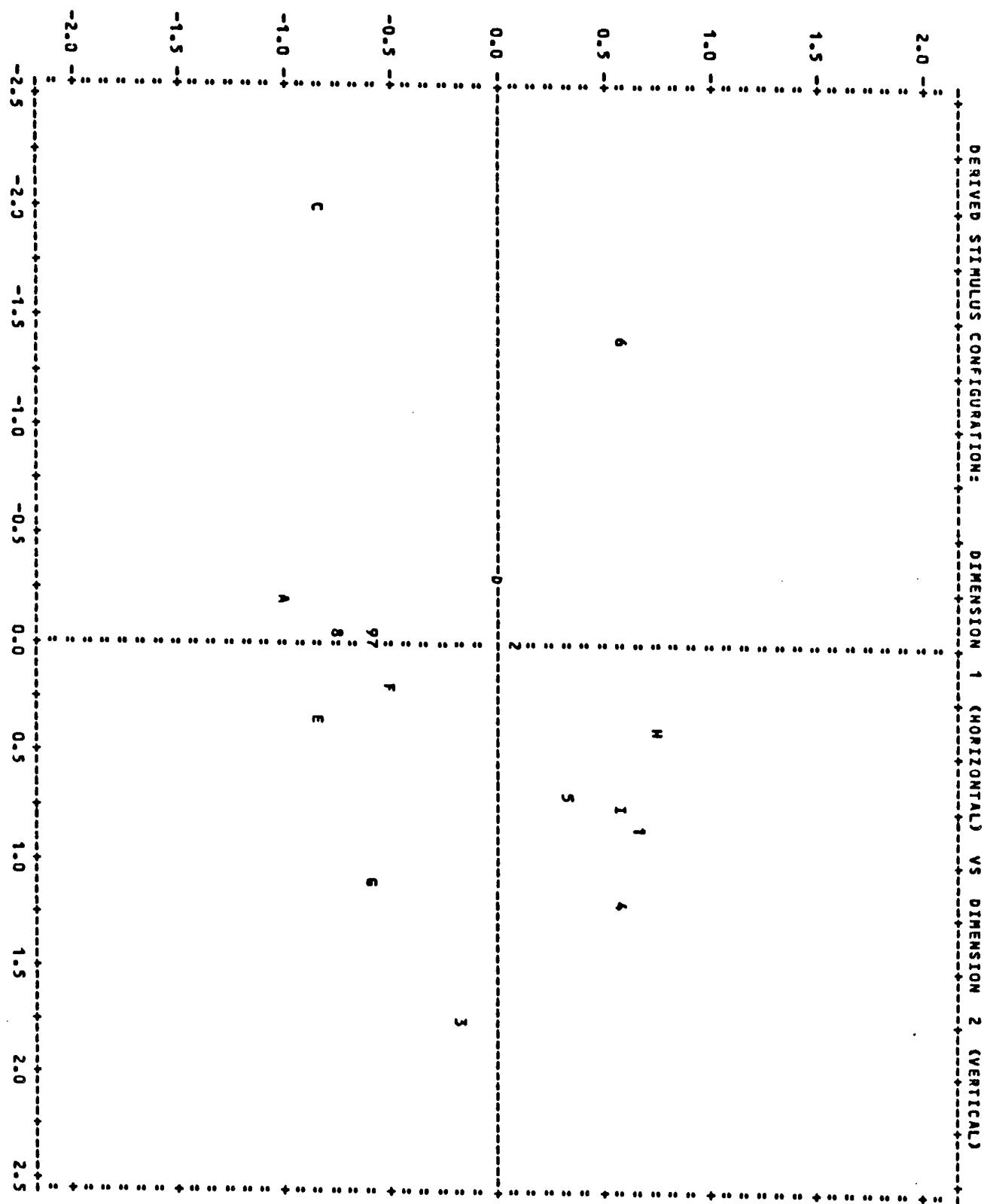
Appendix 9

Specific functional aspects of combat soldier performance during routine service and in combat and battle

Appendix 9a

<u>Specific functional aspects of combat soldiers' performance during routine service</u>

The factors revealed, as well as the SSA facets, elements and combinations derived suggest a global representation of those aspects which characterize the performance, conduct and image of combat soldiers during peacetime and routine service. The analysis of the intercorrelations among the items, the factor and facet scores, and the objective performance measures considered suggest, however, an additional insight into the meaning of each item as well as the interrelationships among the different aspects representing combat soldiers' peacetime performance.

Because of the specific interest in aspects of professionalism (evaluation of technical-and-tactical abilities and MOS training score), and in promotion perspectives, those aspects were analyzed independently (in addition to their representation within the factors and facets comprising them).

In order to further explore the relationships among the variables, each variable was treated in turn as a criterion measure. The rest of the variables were then regressed on it. In order to avoid accidental differences, the r square procedure (presenting regression results of every given combination of any defined number of variables on the independent variable) was employed.

While Table A in this Appendix shows the intercorrelations among the different variables, the factor and facet scores, and the relevant hard data measures, Table B presents a summary of regression results.

Correlations between research items are generally medium to medium-high ($r = .25$ to $.83$). Implications of these relatively high correlations will be discussed later in the report. However, analysis of the correlation matrice suggest the following patterns and inferences:

1. The factors identified - The first factor, "Promotion, professionalism and combat", shows high and very high correlations with the Summative facet and its items, and with the Functional/ Professionalism-and-promotion elements, and medium correlations with the Functional/ Discipline and Functional/ Work

regimen perspectives. The second factor, "Work regimen and functional performance", differs from the first in correlating more highly with the Functional/ Work regimen items comprising it, and less highly with the Functional/ Combat perspective.

2. The variables representing the General-summative aspects of the performance (Facet A) - The correlations and the regressions shown by the variables in this group (Variable 2 - "Adjust to the military"; Variable 13 - "Good soldier") yield to the following conclusions:

a. The two variables comprising this facet are highly correlated (.70), suggesting that they indeed address similar aspects. Still, variable 13 is best contributing to the regression on Variable 2, while Variable 2 joins Variables 7 and 15 in contributing best to the regression on Variable 13.

b. In general Variable 13 is a better predictor of the different aspects representing the Functional/ Effort (b1), Functional/ Work regimen (b3) and Functional/ Discipline (b4) elements. It is interesting that this does not apply to the disciplinary hard data measure: Variable 2 shows a little higher correlation with the actual disciplinary conduct than Variable 13 does.

c. The above direction is reversed with regard to the Functional/ Professionalism-and-promotion variables (element b2). Whereas Variable 2 consistently show higher correlations with the different professionalism-and-promotion aspects as well as with actual promotion in rank, Variable 13 does slightly better at predicting achievements in training.

d. Both Variables, 13 and 2, relate similarly to Variable 3, the Functional/ Combat performance perspective.

3. Functional/ Effort and integration in team (b1) - Analysis of the correlations of the items representing this element's combinations suggest two general inferences: (a) Whereas Variables 7 ("useful") and 8 ("team work and cooperation") correlate highest with most of the other aspects of soldiers peacetime performance, the detailed results show considerable variability; (b) Regression results suggest an indication of the coherence of the variables comprising this element: the variables contributing most to the multiple correlation of each of the variables in this element are of this element only. A detailed analysis of the results regarding the variables of this element reveals the following inferences:

Appendix 9a, Table A: Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for combat soldiers rated during their routine service (N= 1294)

	Summative-conduct a1			Functional-specific/ Effort and integration in team b1							b1	Funct./ Prof. & promot. b2	Professionalism Va1	MOS score
	Va2	Va13	a1	Va7	Va8	Va9	Va10	Va14	Va15	Va16	b1	b2	Va1	MOS score
Va2 "Adjustment to military"	-													
Va13 "Good soldier"	.70	-												
a1 Summative-conduct	.92	.92	-											
Va7 "Useful"	.67	.70	.73	-										
Va8 "Team work & cooperation"	.64	.70	.72	.75	-									
Va9 "Fully accomplishes"	.62	.69	.71	.70	.71	-								
Va10 "Interest in work"	.57	.62	.64	.68	.67	.69	-							
Va14 "Social adjustment"	.66	.65	.71	.61	.67	.57	.53	-						
Va15 "Positive initiative"	.65	.70	.73	.72	.67	.68	.70	.67	-					
Va16 "Copes himself"	.59	.57	.63	.64	.59	.64	.58	.61	.72	-				
b1 - Functional/ Effort & integration in team	.74	.79	.83	.87	.86	.85	.83	.79	.88	.82	-			
b2 - Functional/ Professionalism & promotion	.72	.68	.76	.65	.62	.65	.57	.65	.71	.70	.77	-		
Va1 "Technica-and-tactical ability"	.64	.63	.69	.64	.60	.61	.56	.52	.60	.59	.70	.73	-	
Score in MOS course	.16	.19	.21	.16	.18	.14	.14	.12	.13	.14	.17	.21	.21	-
Va4 "Recommend to NCO"	.63	.59	.66	.55	.52	.53	.45	.53	.58	.57	.63	.83	.59	.10
Va5 "Recommend to officer"	.67	.64	.71	.61	.58	.61	.53	.61	.67	.66	.73	.91	.63	.16
Va17 "Chances in NCO"	.65	.61	.68	.55	.54	.57	.49	.60	.62	.62	.68	.92	.62	.19
Va18 "Chances in officer"	.64	.61	.68	.58	.55	.59	.52	.60	.66	.66	.71	.95	.61	.16
sum 4,5,17,18	.71	.66	.74	.62	.60	.63	.55	.64	.69	.69	.75	.99	.67	.17
Actual rank at end of service	.27	.21	.28	.18	.20	.22	.23	.22	.23	.23	.23	.36	.26	.13
Va6 "Shirks"	.51	.60	.60	.54	.57	.58	.54	.46	.53	.43	.62	.51	.46	.11
Va11 "Late"	.37	.39	.41	.34	.31	.34	.32	.30	.32	.26	.37	.37	.32	.06*
b3 - Functional/ Work regimen	.50	.57	.58	.50	.50	.53	.49	.44	.49	.40	.57	.50	.45	.10
b4 - Va12 "Follows disciplinary regulations"	.53	.59	.61	.50	.52	.53	.45	.44	.46	.41	.56	.46	.38	.12
Actual No. of disciplinary violations	-.28	-.25	-.31	-.21	-.24	-.24	-.25	-.21	-.22	-.22	-.27	-.34	-.18	-.28
b5 - Functional/ Combat: Va3 "Rely in combat"	.60	.59	.64	.55	.54	.53	.46	.52	.54	.51	.62	.62	.57	.08
Factor 1 - Promotion, profess. & combat	.80	.75	.84	.72	.70	.71	.64	.75	.80	.78	.87	.98	.76	.16
Factor 2 - Work regimen & function perf.	.73	.84	.86	.83	.83	.84	.79	.68	.76	.66	.91	.72	.67	.15

Except for those identified * all correlations are significant at .05 level and below

(Table continues)

Appendix 9a, Table A (continued) : Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for combat soldiers rated during their routine service (N= 1294)

Variable	Promotion						Functional/ Work regimen b3			Funct./ Discip. b4		Funct./ Combat b5	Factor 1 Promot. Profes. combat	Factor 2 Work regimen perf.
	Va4	Va5	Va17	Va18	Sum 4,5,17,18	Rank	Va6	Va11	b3	Va12	No. Violat.	Va3		
Va2 "Adjustment to military"														
Va13 "Good soldier"														
a1 Summative-conduct														
Va7 "Useful"														
Va8 "Team work & cooperation"														
Va9 "Fully accomplishes"														
Va10 "Interest in work"														
Va14 "Social adjustment"														
Va15 "Positive initiative"														
Va16 "Copes himself"														
b1 - Functional/ Effort & integration in team														
b2 - Functional/ Professionalism & promotion														
Va1 "Professionalism"														
Score in MOS course														
Va4 "Recommend to NCO"	·													
Va5 "Recommend to officer"	.74	·												
Va17 "Chances in NCO"	.71	.74	·											
Va18 "Chances in officer"	.69	.88	.83	·										
Sum 4,5,17,18	.83	.91	.92	.96	·									
Actual rank at end of service	.21	.29	.34	.33	.33	·								
Va6 "Shirks"	.42	.47	.45	.46	.50	.19	·							
Va11 "Late"	.31	.32	.36	.33	.36	.16	.41	·						
b3 - Functional/ Work regimen	.42	.46	.46	.45	.49	.20	.49	.87	·					
b4 - Va12 "Follows disciplinary regulations"	.38	.42	.43	.41	.45	.19	.45	.41	.49	·				
Actual No. of disciplinary violations	-.21	-.28	-.35	-.33	-.33	-.28	-.27	-.20	-.27	-	·			
b5 - Functional/ Combat: Va3 "Rely in combat"	.66	.56	.50	.53	.60	.12	.42	.25	.38	.35	-.13	·		
Factor 1 - Promotion, profess. & combat	.82	.90	.88	.91	.97	.36	.55	.38	.54	.50	-.32	.71	·	
Factor 2 - Work regimen & function perf.	.60	.67	.64	.65	.70	.29	.78	.60	.79	.71	-.32	.59	.80	·

Except for those identified * all correlations are significant at .05 level and below

Appendix 9a, Table B: Summary of SPPE item regressions for combat soldiers rated during their routine service (N=1294)

	Maximum multiple correlation achieved	Maximum multiple correlation with 2 variables	The variables contributing to the regression most first in order	second in order	Variables showing negativ Betas
Va2 "Adjustment to military"	.82	.76	Va13	Va5	
Va13 "Good soldier"	.84	.77	Va2,7,5	Va2,9,8	
a1 Summative-conduct	1.00	.88	Va1,13	Va5,17,18	
Va7 "Useful"	.84	.80	Va8	Va15	
Va8 "Team work & cooperation"	.84	.80	Va7	Va9,14	
Va9 "Fully accomplishes histasks"	.82	.77	Va10	Va13	
Va10 "Interest in work"	.79	.76	Va15	Va9	
Va14 "Social adjustment"	.78	.73	Va15	Va2	
Va15 "Positive initiative"	.85	.80	Va16	Va13	
Va16 "Copes himself"	.79	.76	Va15	Va18,5	
b1 - Functional/ Effort & integration in team	1.00	.92	Va7	Va6	
b2 - Functional/ Professionality & promotion	1.00	.96	Va17,18	Va5,4,1	
Va1 "Technical-and-tactical ability"	.77	.71	Va7	Va17	
Score in MOS course	.28	.21	Va1,17	All	
Va4 "Recommend to NCO"	.82	.80	Va5	Va3	
Va5 "Recommend to officer"	.91	.90	Va18	Va4	
Va17 "Chances in NCO"	.87	.85	Va18	Va4	
Va18 "Chances in officer"	.92	.92	Va5	Va17	
Sum 4,5,17,18	1.00	.98	Va18,17	Va4,5,17	
Actual rank at end of service	.39	.35	Va17	Va2-6,10 11,18	
Va6 "Shirks"	.72	.68	Va9,13,8	Va11	
Va11 "Late"	.58	.56	Va6	Va12	
b3 - Functional/ Work regimen	1.00	1.00	Va6	Va11	
b4 - Va12 "Follows disciplinary regulations"	.66	.62	Va13	Va11	
Actual No. of disciplinary violations	.42	.37	Va17	Va12	
b5 - Functional/ Combat: Va3 "Rely in combat"	.74	.70	Va4	Va13	
b5 - Functional/ Combat: Va3 "Rely in combat"	.74	.70	Va4	Va13	

a. Except for Variable 16 ("Copes himself"), showing the lowest correlations with the Summative aspect of combat soldier peacetime performance (a1), all the other b1 items show higher and similar correlations with this aspect.

b. With regard to professionalism: While Variable 7 shows the highest correlation with the evaluation of the technical-and-tactical abilities, Variable 8 is related most highly to MOS training achievements. Variable 14 ("Social adjustment"), on the other hand, shows the lowest correlations with both professionalism measures.

c. In terms of promotion prospects: while Variables 15 ("Shows positive initiative") and 16 ("copes himself before turning over problems") relate highest to evaluation of NCO and officer promotion prospects, Variable 10 shows the lowest correlation with this perspective. Except for Variable 7 all items are similarly related to actual promotion in rank. Variable 7 correlates least with actual promotion.

d. Variables 8 and 9 relate most, and Variable 14 least, to the Work regimen (b3) items.

e. Variables 9 ("Fully accomplishes his tasks") and 8 correlate most highly, and Variable 16 least, with the evaluative discipline aspect (b4). Yet, Variables 10, 8 and 9 are related most to actual disciplinary conduct.

f. While Variable 10 ("Interest in work") shows the lowest correlation with prospects for combat performance (b5), all other variables show higher and similar correlations with this perspective.

4. The Professionalism aspects (Variable 1 and the score in MOS training) -

a. Consistent with the domain it measures Variable 1 correlates with MOS training score more than any other evaluative dimension measured. While Variable 7 ("Useful") contributes most to the partial correlation with variable 1, Variables 1 and 17 ("Chances in NCO") contribute most to the regression on MOS training score.

b. Variable 1 is among the items correlating least with the Functional/Discipline (evaluation and actual conduct) and Work regimen aspects.

c. The relatively lowest correlation between MOS score and soldiers' prospects for functioning in combat is of specific interest.

5. The Promotion perspective -

a. The different measures reflecting soldiers' potential for promotion intercorrelate quite highly, suggesting that they represent a common construct.

b. The Promotion items correlate least with the Functional/ Work regimen and the Discipline aspects.

c. While the NCO promotion perspective shows a relative higher correlation with the combat perspective, the officer promotion perspective shows relative higher correlations with all the other peacetime functioning perspectives.

d. While Variable 17 ("Chances in NCO training") contributes most to the prediction of actual promotion in rank, Variables 5 ("Recommend for officer") and 18 ("Chances in officer training") contribute most to regression on the different evaluative promotion aspects.

6. Functional/ Work regimen (b3) -

a. Of the two variables representing this aspect Variable 6 ("Shirks from work and musters") consistently shows higher correlations with all the other variables.

b. The Work regimen items show relative low correlations with prospects of combat performance.

7. Functional/ Disciplinary conduct (b4) -
a. Variable 12 does not show the expected highest negative correlation with the discipline hard data measurement.

b. An analysis of its intercorrelations with the other variables proves that Variable 12 shows its highest correlations with the summative aspects of peacetime performance, and its lowest with performance in combat.

c. Actual disciplinary conduct is correlated most highly with promotion prospects, and least with evaluation of professional ability.

d. Regression results are coherent with the pattern described above.

8. Prospects for performance in combat (b5) - Variable 3 is central to commanders' evaluations of their soldiers and to their reaction to them. The results suggest the following inferences in this regard.

   a. The sense the commander has of the degree to which the soldier may be relied upon in combat shows the lowest relative correlations with all the hard data measures (score in training course, actual disciplinary conduct, and rank at end of service).

   b. Vis-a-vis the other evaluation aspects, Variable 3 shows the lowest relative correlations with evaluations of Work regimen and Discipline.

   c. Recommendation to NCO training (Variable 4) contributed most to the regression on this perspective of combat performance.

Appendix 9b

Specific functional aspects of combat soldiers' performance in battle and in fight

Detailed regression and intercorrelations among questionnaire items, the factors and facets identified, and aspects of practical interest (promotion and professionality measures) were also produced for performance evaluation of soldiers after they have been involved in fighting-- the SCPE data.

While Table C in the Appendix summarizes the regression results, Table D shows the intercorrelations among the different SCPE variables.

Like the SPPE,SCPE item intercorrelations were relatively high, ranging from r = .40 to .84. While being significant and relatively high, considerations discussed later in the report suggest a basic interest in the differential patterns shown in the correlation matrice.

A summary of the results suggest the following inferences:

1. The factors identified - The two factors are highly correlated (.79). As expected the factors show high correlations with the items they comprise and with the facets they overlap. However, considerable correlations are obtained also with items which have not been included in the factors. While the first factor shows overall higher correlations with the items and facets, the second factor is considerably more effective in predicting the hard data criteria employed-- disciplinary conduct, promotion in rank, and score in MOS course.

2. The variables included in the Summative/ Technical-and-tactical combination (a1b1) - The correlations and regressions shown by the variables representing this element's combinations, variables 9 ("may be relied upon in combat") and 11 ("overall functioning during fighting") yield the following conclusions:

   a. In consistency with the SSA configuration interpretation, these variables show the highest overall intercorrelations, as well as the highest correlations with other variables. Also, in regard to the Radex interpretation, the variables representing this aspect show the highest correlations with variables assigned to the other Summative combination (a1b3). The regressions on variables 9 and 11 achieve very high multiple correlation values, with Variable 10 ("Choose for future combat missions"), which is assigned to the other Summative combination, contributing most to the multiple correlation. Variables

Appendix 9b, Table C: Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for combat soldiers rated after combat (N= 594)

| | Summative combinations | | | | Functional combinations | | | | | | | | |
| | Summative/Technical & tactical a1b2 | | | Summa./ Perf. & Promot. a1b3 | Functional/ Determination & Control a2b1 | | | | Functional/ Technical & Tactical a2b2 | | | | |
	Va9	Va11	a1b1	Va10	Va1	Va2	Va5	a2b1	Va3	Va4	Va6	Va8	a2b2
Va9 "May be relied upon in combat"	•												
Va11 "Overall functioning"	.83	•											
a1b1 - Summative/ Technical & tactical	.96	.95	•										
a1b3 - Summative/ Performance & Promotion(Va10)	.87	.84	.90	•									
Va1 "Calm & collected"	.72	.70	.75	.68	•								
Va2 "Courage & readiness to cope with danger"	.71	.71	.74	.70	.81	•							
Va5 "Operational functioning not impaired"	.63	.62	.62	.59	.67	.62	•						
a2b1 - Functional/ Determination & control	.77	.76	.80	.72	.91	.89	.85	•					
Va3 "Cooperated in squad"	.73	.72	.76	.73	.64	.68	.52	.69	•				
Va4 "Fully accomplished his part in mission"	.76	.75	.78	.66	.68	.63	.61	.76	.79	•			
Va6 "Sticking to the goal"	.78	.77	.80	.76	.75	.76	.68	.81	.72	.80	•		
Va8 "Adjusted to difficult conditions"	.73	.75	.76	.69	.67	.66	.61	.72	.63	.66	.68	•	
a2b2 - Functional/ Technical & tactical	.84	.83	.88	.82	.76	.78	.66	.83	.90	.91	.91	.82	•
a2b3 - Functional/ Perf., profes. & promot.	.73	.74	.76	.76	.57	.58	.51	.62	.66	.70	.67	.62	.74
Va14 "Technical-and-tactical ability"	.64	.67	.66	.65	.52	.49	.48	.53	.56	.63	.58	.55	.62
Score in MOS course	.12	.14	.13	.13	.13	.12	.11	.14	.14	.12	.14	.05*	.13
Va15 "Recommend to NCO"	.70	.67	.73	.72	.53	.52	.51	.59	.61	.63	.62	.59	.70
Va16 "Recommend to officer"	.64	.63	.66	.67	.51	.54	.60	.53	.57	.62	.59	.53	.65
Actual rank at end of service	.21	.21	.19	.22	.15	.19	.12	.13	.14	.21	.18	.18	.17
Va17 "Prior performance"	.58	.60	.58	.61	.62	.46	.40	.44	.50	.57	.54	.49	.56
a2b4 - Functional/ Disciplinary conduct (Va7)	.59	.60	.60	.59	.44	.47	.62	.47	.58	.63	.58	.57	.56
Actual No. of disciplinary violations	-.16	-.14	-.08	-.16	-.13	-.08	-.13	-.07*	-.05*	-.16	-.16	-.12	-.07*
Factor 1 - Combat functioning	.90	.89	.94	.89	.85	.85	.77	.92	.85	.86	.90	.82	.96
Factor 2 - Routine functioning & Promotion	.76	.77	.80	.78	.59	.60	.53	.64	.69	.74	.71	.66	.79

Except for those identified * all correlations are significant at .05 level and below

(Table continued)

Appendix 9b, Table C (continued) : Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for combat soldiers rated after combat (N= 594)

	Funct./ Perf. profes. promot. a2b3	Professionalism Va14	MOS score	Promotion			Prior perf. Va17	Functional/ Disciplinary conduct a2b4		Factor 1 Combat Funct. Va4	Factor 2 Routine funct.& promot. Va6
			Va15	Va15	Va16	Rank		Va7	No. Violat.		
Va9 "May be relied upon in combat"											
Va11 "Overall functioning"											
a1b1 - Summative/ Technical & tactical											
a1b3 - Summative/ Performance & Promotion(Va10)											
Va1 "Calm & collected"											
Va2 "Courage & readiness to cope with danger"											
Va5 "Operational functioning not impaired"											
a2b1 - Functional/ Determination & control											
Va3 "Cooperated in squad"											
Va4 "Fully accomplished his part in mission"											
Va6 "Sticking to the goal"											
Va8 "Adjusted to difficult conditions"											
a2b2 - Functional/ Technical & tactical											
a2b3 - Functional/ Perf., profes. & promot.	-										
Va14 "Tecnical-and-tactical ability"	.84	-									
Score in MOS course	.22	.19	-								
Va15 "Recommend to NCO"	.89	.66	.19	-							
Va16 "Recommend to officer"	.90	.66	.20	.75	-						
Actual rank at end of service	.29	.21	.16	.27	.35	-					
Va17 "prior performance"	.84	.65	.22	.64	.67	.29	-				
a2b4 - Functional/ Disciplinary conduct (Va7)	.58	.45	.10	.56	.50	.24	.50	-			
Actual No. of disciplinary violations	-.16	-.15	-.19	-.22	-.22	-.31	-.20	-.19	-		
Factor 1 - Combat Functioning	.76	.67	.13	.71	.67	.18	.61	.64	-.08	-	
Factor 2 - Routine functioning & Promotion	.98	.81	.21	.88	.88	.29	.83	.72	-.16	.79	-

Except for those identified * all correlations are significant at .05 level and below

Appendix 9b, Table D:

Summary of SCPE item regressions for combat soldiers rated after combat (N = 594)

	Maximum multipl correlation achieve	Maximum multiple correlation with 2 variables	The variables contributing to the regression most first in orde	second in order	Variables showing negativ Betas
Va9 "May be relied upon in combat"	.91	.89	Va10	Va6,11	
Va11 "Overall functioning"	.90	.88	Va10	Va8	
a1b1 - Summative/ Technical & tactical	.94	.92	Va9	Va11	
a1b3 - Summative/ Performance & Promotion(Va10)	.91	.89	Va9	Va15,11	
Va1 "Calm & collected"	.86	.84	Va2	Va6,9,5	
Va2 "Courage & readiness to cope with danger"	.86	.84	Va1	Va6,3,10,4	
Va5 "Operational functioning not impaired"	.75	.72	Va6	Va1	
a2b1 - Functional/ Determination & control	.85	.83	Va2,1	Va5	
Va3 "Cooperated in squad"	.85	.84	Va4	Va6	
Va4 "Fully accomplished his part in mission"	.87	.85	Va3	Va6	
Va6 "Sticking to the goal"	.88	.85	Va4	Va1,2	
Va8 "Adjusted to difficult conditions"	.81	.77	Va11	Va5,9,1	
a2b2 - Functional/ Technical & tactical	.93	.88	Va6,4	Va3,6,8	
a2b3 - Functional/ Perf., profess. & promot.	1.00	.92	Va16	Va14,15	
Va14 "Technical -and-tactical ability"	.78	.74	Va11	Va16,17	
Score in MOS course	.28	.22	Va17	All in turn	
Va15 "Recommend to NCO"	.83	.81	Va16	Va10	
Va16 "Recommend to officer"	.82	.79	Va15	Va17	
Actual rank at end of service	.39	.36	Va16	Va7,17	
Va17 "Prior performance"	.75	.72	Va16,14	Va11,15,14	
a2b4 - Functional/ Disciplinary conduct (Va7)	.71	.66	Va4	Va11,15,8	
Actual No. of disciplinary violations	.29	.23	Va16	Va15,7	

Appendix 9b, Table D: Summary of SPPE item regressions for combat soldiers rated during their routine service (N=594)

6 ("sticking to the goal") and 8 ("adjust to difficult conditions") additionally contribute to the multiple correlation.

      b. While being relatively high, correlations with the Functional element's combinations variables follow a descending order: the Technical-and-tactical items (a2b2) show the highest, the Determination-and-control items achieve medium correlations, and the Performance-professionalism-and-promotion and the Disciplinary items show the lowest correlations.

      c. With regard to the hard-data achievement type criteria - the Summative/ Technical-and-tactical items are relatively more highly related to promotion in rank than to measurement of actual disciplinary conduct or to scores in training.

      3. The variable representing the Summative/ Performance-and-promotion perspective (combination a1b3) - "choose for future combat missions" (Variable 10) shows the following relationships with the other variables :

      a. As mentioned, and as expected, Variable 10 has the highest correlation with the a1b1 variables in the other summative group. Second highest are the correlations with the Functional/ Technical-and-tactical variables (a2b2), lower are the correlations with the Functional/ Determination-and-control variables (a2b1), and following are all others.

      b. "Rely upon in combat" (Variable 9) contributes most to the regression on variable 10, while "overall functioning during fighting" (Variable 11), and promotion prospects for NCO (Variable 15), contribute next to the regression.

      4. The Functional/ Determination-and-control variables (a2b1) - Again, and as predicted following the Radex hypothesis, the items comprising this combination (1, 2, 5) correlate highest among themselves. Additional aspects of the findings are the following:

      a. Variables 1 and 2 correlate highly, and considerably higher than their correlations with Variable 5.

      b. In regard to the Functional/ Performance-professionalism-and-promotion-perspectives (a2b3) items - The a2b1 items show higher correlations with promotion prospects, and with "technical-and-tactical ability" (variable 14),

and lower relative correlations with "following disciplinary regulations" (Variable 7), and with general evaluation of the performance prior to the combat (Variable 17).

c. The variables, as well as their combined composite, correlate higher with training achievements and promotion in rank, than with actual disciplinary conduct.

d. Whereas Variables 1 and 2 alternately contribute to the prediction of Variables 1 and 5, Variable 6 ("was sticking to the goal") contributes most to the regression on Variable 5, as well as to the regression on the combined score of the variables in this combination.

5. The Functional/ Technical-and-tactical aspect (a2b2) comprise the variables 3, 4, 6, 8. data with regard to these variables show the following:

a. In line with the Radex hypothesis, the correlations among the variables in this combination proved higher than their correlations with the other variables.

b. The correlations of the items in this combination with the combat related combinations (Summative/ Technical-and-tactical, a1b1, and Functional/ Determination-and-control, a2b1) proved to be higher than with the combinations not directly related to combat (Functional/ Performance-professionalism-and-promotion, a2b3 and Functional/ Discipline, a2b4).

c. With regard to the hard data criteria the Functional/ Technical-and-tactical variables show the highest correlation with promotion, next with training achievements, and lowest with the disciplinary conduct measures.

d. While Variables 3 ("cooperated in squad") and 4 ("fully accomplished mission") contribute most to the regressions on the specific variables in this combination, "overall functioning during fighting" (Variable 11), contributes most to the regression on the combined composite (Variable 2, "courage and readiness to cope with dangers", contributes to it next).

6. Professional Skills - This aspect is represented by two measurements: evaluation of soldier technical-and-tactical ability (Variable 14), and actual score in MOS training. The data shows that:

a. Achievement in MOS training shows an interesting pattern according to which training results correlate more highly with evaluation of performance prior to combat (Variable 17), promotion prospects (Variables 15 and 16), and

professionalism (Variable 14), than with different aspects of the performance in combat.

   b. Evaluations of professional skills correlate most with summative aspects of combat performance (a1b1; a1b3), performance prior to combat (Variable 17), and promotion prospects (Variables 15 and 16), less with the Functional/ Technical-and-tactical (a2b2) and Determination-and-control (a2b1) combinations, and lowest with the disciplinary aspect (Variable 7; a2b4).

   c. Overall evaluation of the performance during fighting (Variable 11), and overall evaluation of the performance prior to combat (Variable 17), contribute most to the regression on evaluation of professional skills and of training achievements. Prospects for promotion beyond squad leader level (Variable 16), and performance prior to the combat (Variable 17), additionally contribute to the regression on variable 14, while no other variable clearly contribute to the regression on MOS score.

   7. Performance during earlier routine service - The prospects of the performance earlier to combat are represented by item 17. Data with regard to that item show:

   a. The performance prior to combat correlates most with the prospects for promotion (Variables 15 and 16), and with professionalism (Variable 14), and in a descending order, respectively, with the following aspects: the Summative aspects of combat performance (the a1b1 and a1b3 items), the Functional/ Technical-and-tactical (a2b2) items, the Functional/ Discipline (a2b4) and Functional/ Determination-and-control (a2b1 items).

   b. In relation to the hard data criteria, Variable 17 correlates best with promotion in rank, and less with actual disciplinary conduct and with training achievements.

   c. Evaluation of the professional skills (Variable 14) and promotion prospects beyond squad leader (Variable 16) contribute most to the multiple correlation with variable 17. General evaluation of the functioning in combat (Variable 11), and prospects for promotion for NCO, additionally contribute to the multiple correlation.

   8. Promotion prospects (Variables 15 and 16) - As expected, the two evaluative measures of promotion are highly correlated with actual promotion in rank, with prospects for promotion beyond squad leader showing the highest correlation. Together with actual disciplinary conduct and performance during

routine (Variable 17) they attain a higher correlation with promotion in rank than the other variables do.

     a. Prospects for promotion to NCO and beyond generally correlate more closely with the Summative than with the Functional aspects of combat performance.

     b. Officer and NCO promotion prospects are regressed first on each other, while "choose for future combat" (Variable 10), and then "performance prior to combat" (Variable 17) additionally contribute to the regression on NCO and officer promotion prospects.

     9. Disciplinary conduct (Variable 7) - While actual conduct shows higher correlations with actual promotion in rank (highest), performance in routine (Variable 17), MOS training, and evaluation of compliance to military discipline regulations (Variable 7) are related more closely to the Technical-and-tactical items (both Summative and Functional - a1b1, a2b2). When the other variables are regressed on actual disciplinary conduct, officer and then NCO promotion prospects contribute most to the regression. Aspects of combat performance ("fully accomplished his part of the mission" (Variable 4), and the general evaluation of the performance in combat (Variable 11) contribute most to the regression on the evaluation of compliance to discipline regulations (variable 7).

Appendix 10

SCPE SSA configuration of combat soldiers rated after combat - no missing data
allowed
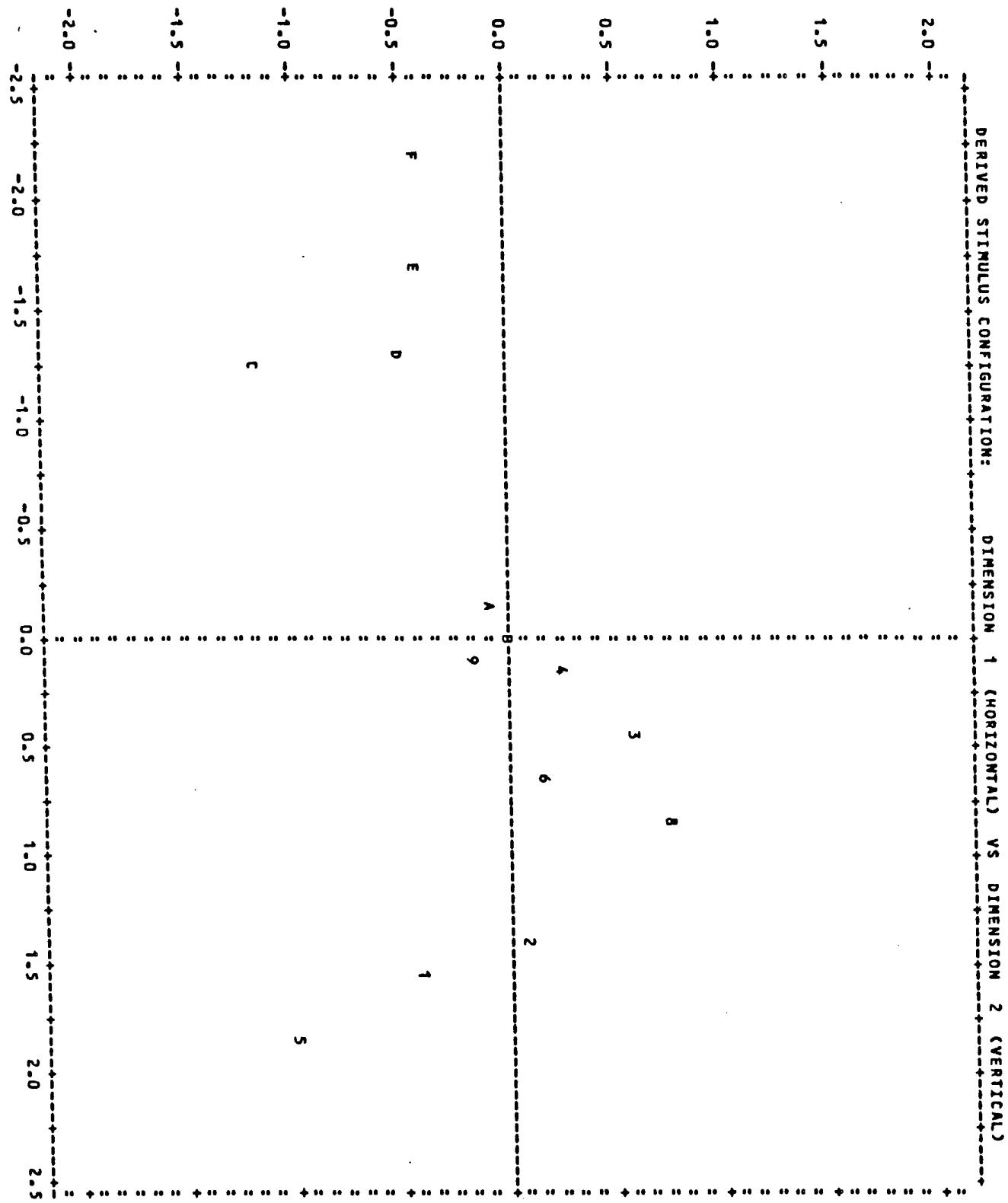
Appendix 11

Summary of SPPE regressions on SCPE

	Maximum multipl correlation achieve	Maximum multiple correlation with 2 variables	The variables contributing to the regression most first in orde	second in order	Variables showing negativ Betas
CVa9 "May be relied upon in combat"	.55	.45	Va16	Va6	
CVa11 "Overall functioning"	.64	.57	Va8	Va17	
a1b1 - Summative/ Technical & tactical	.60	.52	Va9	Va17	
a1b3 - Summative/ Performance & Promotion(CVa10)	.57	.52	Va13	Va17	
CVa1 "Calm & collected"	.60	.49	Va15	Va6	Va3
CVa2 "Courage & readiness to cope with danger"	.63	.53	Va9,15	Va6	Va12
CVa5 "Operational functioning not impaired"	.44	.28	Va7	Va4	Va14
a2b1 - Functional/ Determination & control	.55	.44	Va7,15	Va6	
CVa3 "Cooperated in squad"	.55	.45	Va9,17	Va17,8	Va5
CVa4 "Fully accomplished his part in mission"	.57	.49	Va13	Va17	
CVa6 "Sticking to the goal"	.61	.50	Va8	Va17	Va12
CVa8 "Adjusted to difficult conditions"	.57	.47	Va13,15	Va6	
a2b2 - Functional/ Technical & tactical	.61	.53	Va13	Va17	
a2b3 - Functional/ Perf., profess. & promot.	.62	.30	Va4	Va9,16,13,15	
CVa14 "Technical-and-tactical ability"	.54	.45	Va4	Va9,15	
CVa15 "Recommend to NCO"	.61	.53	Va17	Va9	
CVa16 "Recommend to officer"	.57	.51	Va4	Va13	
CVa17 "Prior performance"	.63	.53	Va8	Va16	Va12
a2b4 - Function / Disciplinary conduct (CVa7)	.42	.22	Va7	Va3,5,13	

Appendix 12

SPPE SSA configuration of non-combat soldiers - no missing values allowed

DERIVED STIMULUS CONFIGURATION: DIMENSION 1 (HORIZONTAL) VS DIMENSION 2 (VERTICAL)
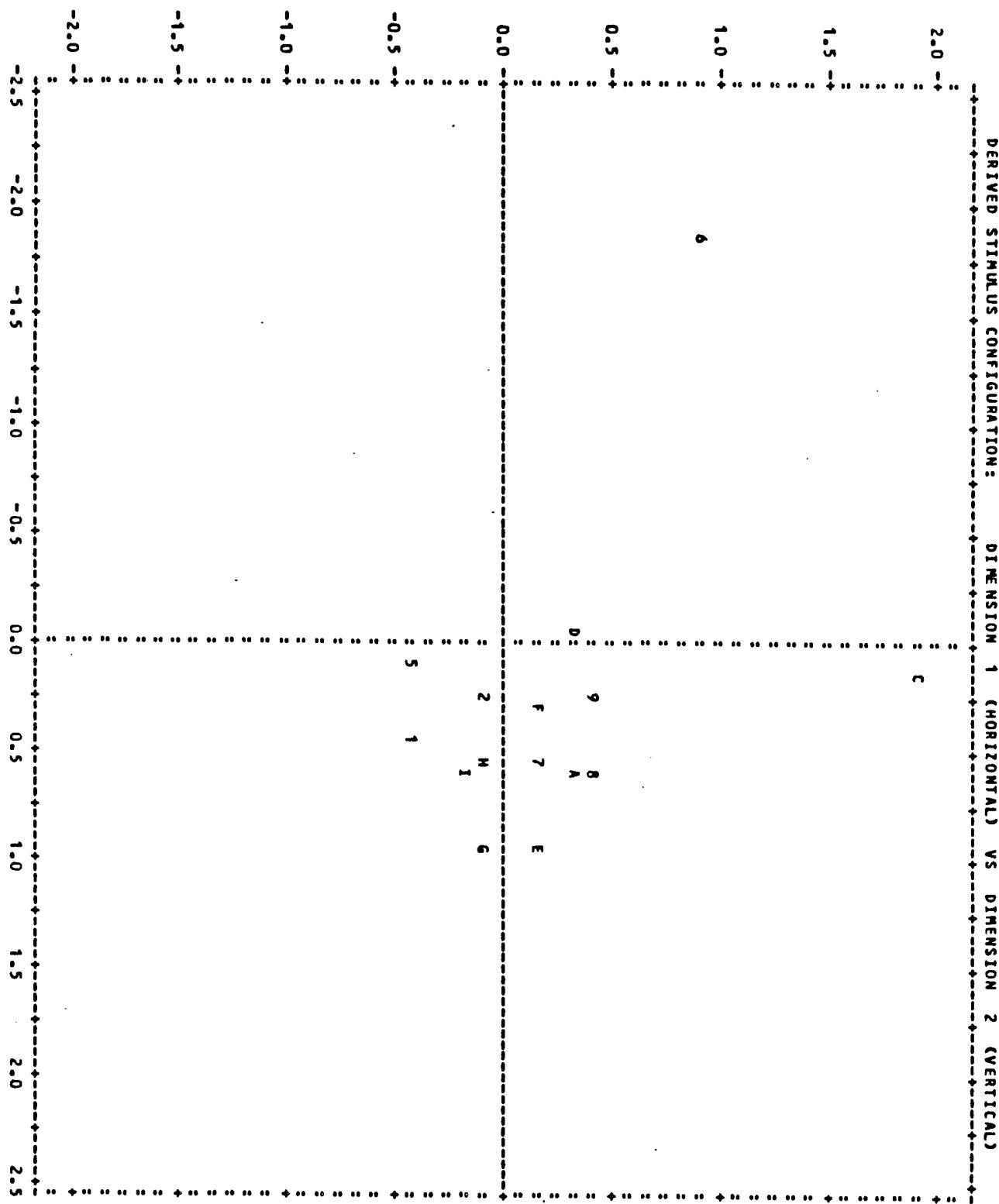
Appendix 13

Specific functional aspects of non-combat soldier performance

The factors and facets revealed suggest a global representation of the aspects characterizing the performance, conduct and image of non-combat soldiers during peacetime and routine service. The analysis of the intercorrelations among the items, the factor and facet scores, and the objective performance measures suggest, however, an additional insight into the meaning of each item as well as to the interrelationships among the different aspects representing non-combat soldiers' peacetime performance. Because of the specific interest in aspects of professionalism (evaluation of technical-and-tactical abilities and MOS training score), and in promotion perspectives, those aspects were analyzed independently (in addition to their representation within the factors and facets comprising them).

In order to further explore the relationships among the variables, each variable was regressed by all the other using the r square procedure. This procedure allows to avoid accidental differences by computing regression results for every given combination of any defined number of variables on the independent variable. While Table E in Appendix 13 shows the intercorrelations among the different variables, the factor and facet scores, and the relevant hard data measures, Table F in Appendix 13 presents a summary of regression results.

The results shown in Table e suggest the following inferences:

1. With regard to the Effort-and-integration-in-team facet (A):

   a. The intercorrelations among the variables of this facet show higher values than the correlations these variables show with other SPPE variables. Consequently, the variables contributing most to the regressions on facet A items are other items of this facet.

   b. The Effort items correlate least with prospects of both promotion to NCO and performance in combat, as well as with the work regimen items.

   c. The variable "good soldier" (13) represents a unique perspective. SSA results indicate that overall it shows the highest correlations with the other questionnaire items. The above is well represented by regression results, where Variable 13 enters most frequently, and contributes most, to the regressions on the other SPPE variables. Of particular interest are the variables item 13 correlates least with. Following the trend indicated with regard to the effort

items in general variable 13 correlates least with both the prospects for NCO promotion and for combat performance and with the work regimen items.

2. The second facet B has three perspectives: Promotion, adjustment and coping, and professionalism.

a. The promotion perspective - The results indicate a clear differentiation between the two promotion perspectives--officer and NCO. The NCO perspective correlates least with actual rank at end of service and with work regimen and discipline, and most with the prospects for functioning in combat. The officer perspective, on the other hand, correlates most with professionalism and with coping and adjustment, and least with work regimen and discipline, showing a medium-range correlation with combat functioning.

In addition to evaluations, this perspective was represented by hard data: the actual rank of the soldier as recorded at end of service. While being predicted best by promotion evaluations, data show that the aspect least related to rank-at-end-of-service is the prospect for soldier performance in combat.

b. The adjustment and coping perspective - The Effort variables and promotion prospects correlate highest with this aspect (and also contribute most to the regression on it), while Work regimen and Discipline items correlate least with it.

c. Professionalism - The technical-and-tactical abilities of the soldier are best predicted by the Effort items and by promotion to officer, while the Work regimen and Discipline items correlate least with it. Prospects for promotion to officer also contribute most to the regression on the technical-and-tactical abilities.

3. The combat performance perspective (together with promotion to NCO this item formed the third facet) - The variable that correlates most with combat perspectives regarding non combat soldiers is promotion to NCO. Promotion to NCO also contributes most to the regression on prospects for performance in combat. Work regimen and Discipline show the lowest correlations with this combat perspective.

4. The Work regimen items (facet 4) - Though being highly intercorrelated and contributing most to each other's regression, it seems that the two items representing the work regimen facet epitomize somewhat different aspects of this perspective. While Variable 6 ("Shirks") is more related to the effort perspective, Variable 11 ("Late") shows invariate and relatively low correlations with all the other items.

Appendix 13, Table E: Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for non-combat soldiers (N= 2407)

	Effort and social adjustment										Profes.	Promotion	
	Va7	Va8	Va9	Va10	Va13	Va14	Va15	A	Va2	Va16	Va1	Va17	Va18
Va7 "Useful and contributing"	-												
Va8 "Team work and cooperation"	.71	-											
Va9 "Fully accomplishes his tasks"	.69	.72	-										
Va10 "Has interest in work"	.65	.67	.71	-									
Va13 "Good soldier"	.68	.69	.68	.66	-								
Va14 "Social adjustment"	.60	.66	.57	.58	.68	-							
Va15 "Positive initiative"	.67	.68	.70	.71	.70	.67	-						
A - Effort and social adjustment	.84	.86	.85	.84	.86	.80	.86	-					
Va2 "Adjust to military"	.61	.61	.58	.59	.63	.62	.63	.72	-				
Va16 "Copes himself"	.60	.57	.62	.60	.58	.57	.70	.72	.57	-			
Va1 "Technical-and-tactical abilities"	.61	.52	.59	.57	.56	.48	.58	.65	.58	.63	-		
Va17 "Chances in NCO training"	.51	.51	.54	.53	.53	.53	.59	.63	.57	.65	.59	-	
Va18 "Chances in officer training"	.51	.50	.54	.53	.53	.51	.59	.63	.55	.65	.59	.91	-
Va5 "Recommend to officer"	.55	.53	.56	.54	.55	.52	.60	.65	.60	.65	.64	.80	.85
Va6 "Recommend to NCO"	.38	.35	.38	.36	.39	.36	.40	.44	.43	.39	.44	.46	.48
Sum 4, 5, 17, 18	.55	.54	.58	.56	.57	.55	.62	.67	.61	.68	.64	.94	.95
Actual rank at end of service	.22	.21	.24	.25	.26	.22	.28	.28	.28	.25	.27	.40	.40
Va3 "May be relied upon in combat"	.35	.34	.34	.34	.37	.34	.36	.41	.40	.31	.37	.31	.32
Va6 "Shirks"	.41	.41	.43	.41	.46	.35	.42	.49	.42	.33	.37	.38	.37
Va11 "Late"	.26	.26	.29	.27	.30	.22	.29	.32	.29	.22	.25	.28	.28
D - Work regimen	.38	.38	.41	.38	.43	.32	.40	.45	.40	.31	.35	.38	.36
Va12 "Follows disciplinary regulations"	.48	.51	.50	.49	.64	.47	.50	.60	.45	.40	.35	.39	.39
Actual no. of disciplinary violations	-.22	-.22	-.23	-.23	-.30	-.22	-.26	-.29	-.25	-.24	-.24	-.34	-.33
Non-combat factor 1 -	.83	.84	.84	.83	.86	.79	.86	.99	.77	.77	.68	.67	.66
Non-combat factor 2 -	.59	.57	.61	.59	.61	.57	.65	.71	.65	.69	.71	.91	.92
Non-combat factor 3 -	.38	.38	.41	.38	.43	.32	.40	.45	.40	.31	.35	.38	.36

(Table continues)

Except for those identified * all correlations are significant at .05 level and below

Appendix 13, Table E (continued) : Intercorrelations* between different SPPE variables, factor and facet scores, and relevant hard data measures for non-combat soldiers (N= 2407)

	Promotion				Combat funct. Prosp.	Work regimen D			Discipline E		Factor 1	Factor 2	Factor 3
	Va5	Va6	Sum 4, 5, 17, 18	rank	Va3	Va6	Va11	D	Va12	Va1			
Va7 "Useful and contributing"													
Va8 "Team work and cooperation"													
Va9 "Fully accomplishes his tasks"													
Va10 "Has interest in work"													
Va13 "Good soldier"													
Va14 "Social adjustment"													
Va15 "Positive initiative"													
A - Effort and social adjustment													
Va2 "Adjust to military"													
Va16 "Copes himself"													
Va1 "Technical-and-tactical abilities"													
Va17 "Chances in NCO training"													
Va18 "Chances in officer training"													
Va5 "Recommend to officer"	-												
Va4 "Recommend to NCO"	.57	-											
Sum 4, 5, 17, 18	.91	.66	-										
Actual rank at end of service	.37	.23	.41	-									
Va3 "May be relied upon in combat"	.37	.60	.63	.16	-								
Va6 "Shirks"	.38	.29	.41	.24	.30	-							
Va11 "Late"	.29	.22	.31	.19	.24	.56	-						
D - Work regimen	.38	.29	.40	.25	.31	.88	.89	-					
Va12 "Follows disciplinary regulations"	.39	.28	.41	.23	.27	.35	.29	.36	-				
Actual no. of disciplinary violations	-.29	-.18	-.34	-.39	-.13	-.23	-.20	-.26	-.30	-			
Non-combat factor 1 -	.68	.46	.71	.30	.42	.49	.33	.46	.67	-.31	-		
Non-combat factor 2 -	.90	.71	.98	.39	.57	.43	.33	.43	.43	-.33	.74	-	
Non-combat factor 3 -	.38	.29	.40	.25	.31	.88	.89	-	.36	-.26	.46	.63	-

Except for those identified * all correlations are significant at .05 level and below

Appendix 13, Table F

Summary of SPPE item regressions for non-combat soldiers
(N= 2407)

	Maximum multiple correlation achieved	Maximum multiple correlation with 2 variables	The variables contributing to the regression most first in order	second in order	Variables showing negativ Betas
Va7 "Useful and contributing"	.80	.76	Va8	Va1	Va18
Va8 "Team work and cooperation"	.82	.78	Va9	Va14	Va1
Va9 "Fully accomplishes his tasks"	.82	.78	Va8	Va10	Va14
Va10 "Has interest in work"	.79	.77	Va9	Va15	
Va13 "Good soldier"	.84	.78	Va15	Va12	
Va14 "Social adjustment"	.77	.73	Va13	Va15	Va1,5,9,17
Va15 "Positive initiative"	.84	.79	Va13	Va16	
A - Effort and social adjustment	1.00	.89	Va9,15	Va8,14	
Va2 "Adjust to military"	.76	.70	Va14,13	Va1,5	
Va16 "Copes himself"	.79	.76	Va15	Va18,5	
Va1 "Technical-and-tactical abilities	.75	.71	Va5	Va7	
Va17 "Chances in NCO training"	.92	.91	Va18	Va16,2	Va15
Va18 "Chances in officer training"	.93	.93	Va17	Va5	Va1,2,4
Va5 "Recommend to officer"	.89	.87	Va18	Va4,1	
Va4 "Recommend to NCO"	.70	.70	Va3	Va5	
Sum 4,5,17,18	1.00	.98	Va18	Va4	
Actual rank at end of service	.43	.41	Va18	Va6	
Va3 "May be relied upon in combat"	.63	.62	Va4	Va2	
Va6 "Shirks"	.72	.68	Va9,13,8	Va11	
Va11 "Late"	.58	.56	Va6	Va12	
D - Work regimen	1.00	1.00	Va11	Va6	
Va12 - "Follows disciplinary regulations"	.66	.64	Va13	Va11,10	Va1
Actual No. of disciplinary violations	.40	.39	Va17	Va12	

5. Rather than with the hard measure reflecting disciplinary conduct, the item representing discipline (Variable 12) is most related to the positive expression of soldiers performance and conduct: the variable "Good soldier" (13). Variable 13 also contributes most to the regression on the discipline item. The variables with which Variable 12 correlates least are the prospects for promotion to NCO, the prospects for performance in combat, and professionalism.

The hard data measurements show similar results: Variable 13 (together with the promotion perspective) correlate highest with the hard data measure of actual disciplinary conduct. Variable 3, representing the prospects for combat performance, correlates lowest with the hard data discipline measure.